

AGRICULTURAL HISTORY

Volume 31, No. 2

April 1957



Published Quarterly

by

THE AGRICULTURAL HISTORY SOCIETY

THE AGRICULTURAL HISTORY DEVELOPMENT FUND

Under the leadership of Dr. H. C. M. Case, the Agricultural History Development Fund was recently established with a Sponsoring Committee composed of the following:

- Joseph Ackerman, Director, Farm Foundation, Chicago, Illinois
Rex R. Bailey, President, Doane Agricultural Service, Inc., St. Louis, Missouri
H. C. M. Case, Professor, Agricultural Economics, University of Illinois, Urbana, Illinois
E. L. Heckler, Manager, Public Relations Department, Armour & Company, Chicago, Illinois
R. W. Howard, Roving Editor, American Meat Institute, Chicago, Illinois
Paul Johnson, Editor, Prairie Farmer, Chicago, Illinois
C. E. Mast, Jr., Editor and Publisher, Agricultural Leaders Digest, Chicago, Illinois
F. H. McKelvey, Farm Manager-Assistant Trust Officer, First National Bank, Springfield, Illinois
C. W. Weldon, Vice President, First National Bank of Chicago, Illinois

The purpose of the Development Fund is to broaden the membership of the Agricultural History Society and to obtain cash contributions which will be used to expand the size, improve the physical appearance, and at the same time maintain the high scholarly standards set by the journal in the past.

Contributions and new memberships as of February 15, 1957, totalled \$1,005.00. New members brought into the Society through the efforts of the Agricultural History Development Committee are as follows:

Sustaining Members

American Meat Institute
Armour & Company
Atchison, Topeka & Santa Fe
Uhlmann Grain Company

Contributors Plus Membership

American Cattlemen's Association
W. I. Boone
Robert H. Burns
W. F. Goodell
Boyd Harper
Trevor L. Jones
J. L. Kridler of Central Soya Company
Frank H. McKelvey
C. L. Mast
Fred B. Meers
National Association of Margarine
Mfrs.
Alexander Nunn
Thomas H. Roberts
Donald G. Smith
A. E. Staley Manufacturing Company
Clarence Watson
C. W. Weldon
E. N. Wentworth

Memberships

B. F. Alvord
Rex R. Bailey
Ashleigh P. Boles
R. A. Burhart
H. M. Briggs
A. B. Caple Company
Joseph Chrisman
Cincinnati & Hamilton
Co. Public Library
Harry J. Devereaux
DeKalb Trust & Savings
Bank
Chester McA. Destler
Gerald W. Detering
H. Fahrnkopf (United
Grain Co.)
Joel E. Ferris
George A. Fox Co.
Fulton Ranch
Federal Reserve Bank of
St. Louis
Fort Hays Kansas State
College
Iowa Farm Bureau
Federation
Kansas State College
Louisiana Farm Bureau
Loyola University
Millard T. Lund
Henry T. McKnight
Marquette University
Murray State College
H. H. Parke
Fred C. Parks
James M. Pierce
Corporation
Producers Livestock
Cooperative Assoc.
F. J. Reiss
Charles B. Shuman
Mervin G. Smith
Wm. Howard Smith
J. C. Spitzer
Texas A & M College
Library
Dave O. Thompson, Sr.
Arthur D. Weber
Ralph Wells
Victor Weybright
W. F. Whipple
J. B. Wilson
Moyle S. Williams
J. F. Ziegler

AGRICULTURAL HISTORY

**A Publication of the Agricultural
History Society Edited at the
UNIVERSITY OF ILLINOIS**

D. A. Brown, Editor

C. Clyde Jones, Associate Editor

Vol. XXXI, No. 2, April, 1957

CONTENTS

William Ewing, Agricultural Agent to the Indians	Donald Jackson	3
Philander H. Standish, Letters of		8
Fog History in the New World	Ira J. Condit	19
English Agricultural Methods and the American Institute, 1871-1872		
	Thomas L. Bushell	25
The Development of Short Courses at the Land Grant Institutions		
	Vernon C. Larson	31
The Pendleton Farmer's Society	Clyde E. Woodall and George E. Aull	36
Book Reviews		38
Notes and Comments		45

THE AGRICULTURAL HISTORY SOCIETY

Editorial Office
Room 226, Mumford Hall
UNIVERSITY OF ILLINOIS
Urbana, Illinois

Officers and Executive Committee

President: Walter H. Ebling, Federal-State Crop Reporting Service, Madison, Wisconsin

Vice-President: J. L. Falconer, Ohio State University, Columbus, Ohio

Secretary-Treasurer: Wayne D. Rasmussen, United States Department of Agriculture

George L. Anderson, University of Kansas, Lawrence, Kansas

Lewis E. Atherton, University of Missouri, Columbia, Missouri

Charles A. Burmeister, 4650 Broad Branch Road, N.W., Washington 8, D.C.

H. C. M. Case, University of Illinois, Urbana, Illinois

Mildred Throne, State Historical Society of Iowa, Iowa City, Iowa

Edward N. Wentworth, Route 1, Box 34, Chesterton, Indiana

AGRICULTURAL HISTORY

The Quarterly Journal of the Agricultural History Society

Agricultural History is designed as a medium for the publication of research and documents pertaining to the history of agriculture in all its phases and as a clearing-house for information of interest and value to workers in the field. Materials on the history of agriculture in all countries are included, and also materials on institutions, organizations, and sciences which have been factors in agricultural development. The Society is not responsible for the statements or opinions of contributors. Editorial communications should be addressed to D. A. Brown, Editor, Agricultural Library, 226 Mumford Hall, University of Illinois, Urbana, Illinois. Books for review should be sent to C. Clyde Jones, Associate Editor, Room 112, David Kinley Hall, University of Illinois, Urbana, Illinois.

All members of the Agricultural History Society receive *Agricultural History*. The memberships are: Student, \$2.00; annual \$5.00; contributing, \$10.00; life, \$133.00, inclusive of all previous payments of dues and contributions, or a sum in U. S. dollars equivalent to 133 less the age of the applicant at his or her last birthday, exclusive of prior dues and contributions; joint membership with the Economic History Association, \$10.00; and joint membership with the Economic History Association and the Economic History Society (England), \$13.00. Single current numbers, \$1.50. Reprints, if available, 25 cents each. An annual subscription to *Agricultural History* is \$5.00 net. Communications regarding memberships, subscriptions, and other business matters should be addressed to Wayne D. Rasmussen, Secretary-Treasurer, Room 3905, S. Agr. Bldg., U. S. Agricultural Marketing Service, Washington 25, D. C.

Advisory Editorial Board

Lewis E. Atherton, University of Missouri	Robert West Howard, American Meat Institute
Vernon Carstensen, University of Wisconsin	Weymouth T. Jordan, Florida State University
Robert G. Dunbar, Montana State College	Rodney C. Loehr, University of Minnesota
Gilbert C. Fite, University of Oklahoma	Theodore Saloutos, U.C.L.A.
Paul W. Gates, Cornell University	Fred A. Shannon, University of Illinois
F. Hal Higgins, Walnut Creek, California	Walter P. Webb, University of Texas

Agricultural History is published for the Agricultural History Society at the Harvard Press, 119-123 West Park Avenue, Champaign, Illinois.

Entered as second-class matter in the Post Office at Champaign, Illinois.

William Ewing, Agricultural Agent to the Indians

DONALD JACKSON

By 1800, most white settlers on the frontier were ready to give the American Indian two choices. He could pack up his cooking pots and beaver traps, and disappear over the horizon—or he could die.

As Thomas Jefferson and the men about him knew, sensible planning required a third alternative. The big difficulty with the Indian was the vast area of land that his mode of living required. Give him a workable substitute for his wide-ranging winter hunts, and he might be able to live in peace beside the white man.

To Jefferson, hard pressed for a solution during the early years of his presidency, there was a way out: the Indian must turn to agriculture. "When they withdraw themselves to the culture of a small piece of land," he wrote, "they will perceive how useless to them are their extensive forests, and will be willing to pare them off from time to time in exchange for necessities for their farms & families."¹

Diverting the tribes from their ancient lifeways in a short time would have been a monumental task. The chiefs along the frontier liked their land big and without rail fences. Jefferson may not have realized the size of the undertaking; certainly he lacked capable men and adequate resources to do the job. His early approach to the problem may be seen in his efforts to expand the farming activities of the Sauk and Fox nations along the upper Mississippi.

The Sauk and Fox lived together in a loose confederation and claimed as their own a substantial part of what is now northern Illinois and southwestern Wisconsin. At the beginning of the century they had made little contact with the Americans, considering themselves the political allies of the Spanish governor at St. Louis and the commercial partners of the British fur traders in Canada. The land they claimed was vital to Jefferson because it lay along the Mississippi, a natural boundary separating the United States from European interests in the New World. Jeff-

erson was eager to extinguish the Indian title to all lands lying on the eastern shore of the river.

Directly responsible for bringing the western tribes to treaty councils was William Henry Harrison, the young governor of Indiana Territory. He spoke often of engineering a treaty with the Sauk and Fox, but the years flew past and it was late in 1804 before he got five chiefs from these two nations into a council room at St. Louis in the newly acquired Louisiana Territory. By then the Louisiana Purchase had quieted American fears about French expansion, but there were still the British in Canada, trying hard to retain the good will of the Indian, bringing trade goods down the river and speaking to the chiefs of disaffection and revolt. A clear title to the eastern shore of the river would help Jefferson to control the activities of these British agents.

The treaty signed on November 3, 1804, became the subject of much bickering—the Indians claiming they had been plied with liquor and duped into signing it. The Sauk warrior Black Hawk was one of the most vehement objectors, and the Black Hawk War of 1832 grew directly from the misunderstandings surrounding the treaty. About fifteen million acres, in Illinois, Missouri, and Wisconsin, were ceded to the United States.

Article 3 of the treaty said, in part:

And if the said tribes shall . . . desire that a part of their annuity should be furnished in domestic animals, implements of husbandry and other utensils convenient for them, or in compensation to useful artificers who may reside with or near them and be employed for their benefit, the same shall . . . be furnished accordingly.²

To the Indians the good news in this sentence was the promise of a blacksmith.

¹ Jefferson to Harrison, Feb. 27, 1803, in Logan Esarey, editor, *Messages and Letters of William Henry Harrison* (Indianapolis, 1922), 1:69 ff.

² The treaty is in *United States Statutes at Large*, 7:84-87.

Every tribe needed one to mend the shoddy hardware the traders sold them, for the traps had weak and brittle springs and the gunlocks were crude. Through the years the same cry rang through the councils with the white men up and down the Mississippi Valley: *send us a blacksmith!*

The Sauk and Fox would get their blacksmith later. First, they were going to get a farmer.

Up in the Sauk-Fox country there was a 12-mile system of rapids on the Mississippi so deceptive that in high water not a ripple broke the surface above them. Even in August, when the flow was sluggish and the level was down, there were only a few swirls to mark the chains of limestone and blue clay that lay shore-to-shore across the channel. The first chain occurred about two miles above the mouth of the Des Moines River, and the rapids were called the Des Moines Rapids. The French usually said *Le Moine* and the Americans toyed with the spelling—Lamoin, De Moyen, Demoine.

To the head of the rapids, across the river from a Sauk village, came the new agricultural agent in the summer of 1805 with a mare, a horse, and a wagonload of equipment. The location he chose was later to become the Nauvoo of the Mormons, and local tradition says that the cabin he built there was expanded into the house once occupied by Joseph Smith, the Mormon leader.

The man was William Ewing, "a sober, honest, faithful young man," whom Secretary of War Dearborn had located in Pennsylvania. Agreeing to take the post for \$400 a year, he had left the East in March with a letter from Dearborn to Harrison in his pocket. The letter described him as being "well acquainted with the practical part of common farming in Pennsylvania." Harrison was instructed to supply him with agricultural implements and send him off to the Sauk and Fox nations.³

Getting into Indian country was a slow process involving overland travel and keelboating on the western rivers. It was May before Ewing had checked with Harrison, received his orders, and journeyed on to St. Louis. Pierre Chouteau, the govern-

ment's Indian agent there, gave him a horse and mare and started them plodding overland toward the Des Moines Rapids. But it was mid-June before Ewing and his interpreter, a swart Creole trader named Louis Honoré, left to go up the river.⁴

Honoré was a trader who had lived at the head of the rapids for several years. He had even been something of an agricultural agent himself, for back in 1799 when the Spanish had given him leave to settle at the rapids they had told him to plant trees, sow crops, and teach the Indians something about farming. He seems to have taken care of this obligation mainly by planting an apple orchard.

William Ewing's detailed instructions have not been preserved. No doubt they read something like the orders given another Indian agent, Nicholas Boilvin, the following year:

You will, by precept and example, teach the Indians such of the arts of agriculture and domestic manufactures, as your situation will admit . . . You should early procure Garden seeds, peach and other fruit stones, and apple seeds. A Garden should be established for the most useful vegetables, and nurseries planted with fruit trees; for the purpose of distributing the most useful seeds and trees among such of the Chiefs as will take care to cultivate them. You should also instruct them in the art of cultivating and preserving the fruit trees and garden vegetables.

The cultivation of Potatoes ought to be immediately introduced into your own Garden;—and the Indians should be encouraged to cultivate them, as an important article of food, and the substitute for bread . . . Ploughs should be introduced, as soon as any of the Chiefs will consent to use them . . .⁵

The first man to report a contact with Ewing was Lieutenant Zebulon Pike. Shortly after sunrise on August 20, Pike reached the foot of the rapids in a keelboat manned by 20 enlisted men of the First

³ Dearborn to Ewing and Dearborn to Harrison, both March 18, 1805, SW, LS, Indian Affairs, B:46, National Archives.

⁴ For the preparations in St. Louis see the following letters in Pierre Chouteau letterbook, Missouri Historical Society: Chouteau to Harrison, May 14 and May 31, 1805; Chouteau to Dearborn, Aug. 5, 1805.

⁵ Dearborn to Boilvin, April 10, 1806, in *Wisconsin Historical Collections*, 19:315-16.

Infantry Regiment. The young officer was two weeks out of St. Louis and bound far upstream to find the source of the Mississippi. Until Ewing and Honoré came down to help him he was stalled by the rapids.

"We had passed the first and most difficult shoal," he wrote in his diary, "when we were met by Mr. Wm. Ewing, who I understand is an agent appointed to reside with the Sac's to teach the science of agri-

culture, with a French interpreter, four chiefs and 15 men of the Sac nation, in their canoes, bearing a flag of the United States."

Ewing's gang took some barrels into their three canoes, put two Indian pilots aboard the keelboat, and escorted the expedition up the rapids. They arrived at the agricultural establishment at dusk, having spent the entire day muscling the 70-foot craft up the 12 miles of tricky shoals.

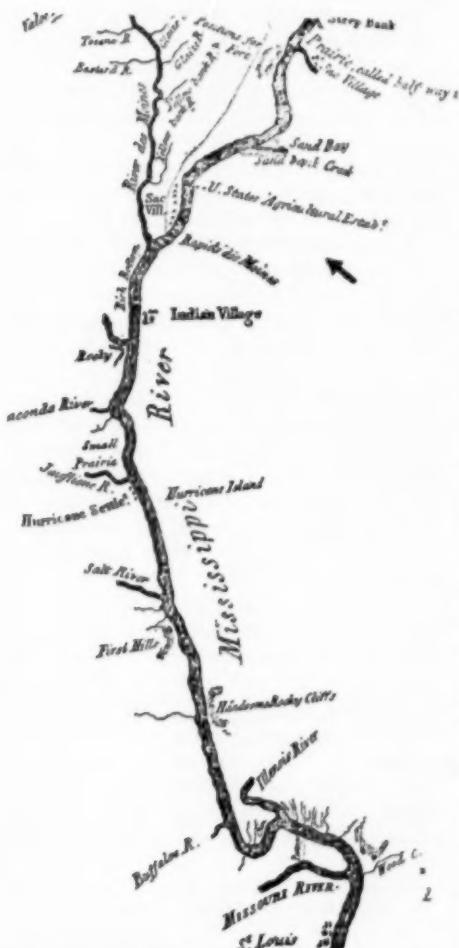
Pike's impression of Ewing and Honoré was not favorable. He wrote that night to his superior in St. Louis, General James Wilkinson, and called Honoré "a hypocrite, possessing great gasconism." He said that Ewing and Honoré were planning to descend the river on a visit soon, "when your penetration will give you *le tout ensemble* of their characters."⁶

The truth seems to be that Ewing, in a position that an earnest missionary might have found taxing, was little more than a brash young adventurer who had taken the job just for the fun of it. From here on, nothing that he did met the approval of his superiors in St. Louis.

"Mr. Ewing our resident at the River des Moine, came down in a few days since, for some necessaries and to procure an additional labourer to assist in putting in his fall crop . . ." So reported Wilkinson to the Secretary of War in early September. There was nothing unusual in this visit; it provided Wilkinson an occasion to discover *le tout ensemble* of Ewing's character. But exactly a month later Wilkinson was reporting, "Mr. Ewing . . . is frequently sending for Articles of accommodation & provisions, with which I am told he must be supplied—the cost of these Articles is trifling but the expense of transport by Engagés [French boatmen] in the usual way is extravagant indeed."⁷

⁶ Pike's visit at the Rapids is in Elliott Coues, editor, *The Expeditions of Zebulon Montgomery Pike* (New York, 1895), 1:13-15. Pike's letter to Wilkinson, *ibid.*, 1:221-23.

⁷ Wilkinson to Dearborn, Sept. 8, 1805, in Clarence Edwin Carter, editor, *The Territorial Papers of the United States* (Washington, D.C., 1934-), 13:199, and Wilkinson to Dearborn, Dec. 3, 1805, *ibid.*, 13:236.



The Mississippi Valley, Early 19th Century. The U.S. Agricultural Establishment is indicated by arrow near top of map. (From Zebulon Pike, *An Account of Expeditions to the Sources of the Arkansas . . . Philadelphia, 1810.*)

By December the tone of Wilkinson's letters to Dearborn had grown more impassioned:

. . . I found Him in a place, which He is utterly unqualified to fill—He is I understand placed at the River Desmoin, to teach the Indians the Arts of Agriculture, but has I believe given but a wretched example—this is I think the Third visit he has made since my arrival to this place, and I expect his disbursements which are supplied by Mr. Chouteau may exceed expectation—He appears to be a young man of innocence, levity & simplicity—without experience or observation.⁹

(This was Wilkinson's response to an inquiry from the forgetful Secretary, who had written, "Pray who is M^r Ewing who resides on the River le Moin?"")

No one came forth with any of these theories: that William Ewing, for all his faults, was a lonely stranger in a hard land; that he was up against a band of crusty chiefs who did not want him around; that he knew in his heart that the Sauk and Fox women were better farmers than he was.

How, he must have wondered, was he going to teach farming to a people who had several hundred acres of corn in cultivation and whose bins were filled with squash, pumpkins, and melons; who often sold corn to the white trader upriver at Prairie du Chien; who could go on reaping a fair harvest from their fields even if they never saw a plow?

Certainly Ewing would have seen that the core of the Indians' diet was meat. And he might teach them to raise more corn, he might introduce them to potatoes, but he could never turn them into cow-milkers and hog herdsmen. Their centuries-old routine offered them deer and bear killed in the forests; catfish and buffalo fish taken in basswood fiber nets; mallards and blue geese brought down with buckshot; and they were supposed to trade all this for salt pork and stringy beef, raising the cattle in fenced pastures and running the swine wild on acorn mast under the swamp oaks.

Something was wrong with this new way of life, in the Indian view. It tied a man to a herd of rag-tag cattle or a roving band of snuffling razorbacks. As every frontier

farm boy knew, livestock meant morning and evening chores the year around. What would happen to the winter hunts?

And so, in the end, it came back to land. For only by maintaining hunting grounds that ran into thousands of acres could the Sauk and Fox provide themselves with meat and with the furs which they bartered for gunpowder, traps, yard goods, blankets, and the trinkets of silver and colored glass that delighted their kind.

There was more to Ewing's problem than his own inadequacy and the fact that he was trying to teach the Indians something they were not ready to learn. Another handicap was his nationality: he was an American. Day by day the British from Canada were convincing the tribes that all Americans were bad. Incidents multiplied; ill will developed on both sides.

In the autumn of 1806 the young Sauk and Fox warriors swooped down upon Ewing's farm and killed his cattle and horses with arrows. For this attack they got just about what they could have expected—a tongue-lashing from General Wilkinson.¹⁰ But it came a long time after the deed, it was written down on paper and intoned by an interpreter before a council fire, and probably not taken very seriously. Indeed, the power of the Great Father in Washington was beginning to seem small—just as the Canadian traders insisted that it was.

The Indians had a phrase that said it all: their hearts were bad. And because their hearts stayed bad, and because William Ewing faltered, a new man was sent to the Des Moines Rapids who had more authority, more experience, and more common sense. Ewing stayed on, but now he had a supervisor. Nicholas Boilvin was a chunky, stooped, bowlegged Frenchman in his early forties who had been in the region

⁹ Wilkinson to Dearborn, Dec. 3, 1805, in Coues, *The Expeditions of Zebulon Montgomery Pike*, 1:15n.

¹⁰ Dearborn to Wilkinson, Oct. 16, 1805, *The Territorial Papers of the United States*, 13:240.

¹¹ Wilkinson to the Sauk and Fox nations, Oct. 28, 1806, in Wilkinson Papers, vol. 2, Chicago Historical Society.

since boyhood. His assignment was to keep the peace, mediate, conciliate, and in general serve as a stern but benevolent representative of President Jefferson. Among his other duties was the task of overseeing the farming operation, and he would soon be sending down more unfavorable reports on Ewing's conduct.

Zebulon Pike had given Ewing's career in the Indian service its first downhill shove. Nicholas Boilvin helped to speed the young man out, but it was William Clark who finally brought about his discharge. The Lewis and Clark expedition returned to St. Louis in the fall of 1806. After spending the winter back East, William Clark accepted an appointment as Superintendent of Indian Affairs for the Louisiana Territory with headquarters at St. Louis. (At the same time, Meriwether Lewis became governor of the Territory.) Clark was appointed on March 7, 1807, and he was soon handed the problem that had been annoying territorial officials for two years—what to do with Ewing.

"Much has been said respecting the Conduct of Mr Youin the Farmer for the Santees but nothing which can authorise me to make any change in his situation."¹¹ So wrote Clark to Dearborn in June, soon after he had taken over his duties.

Then Clark must have realized that he would never get Ewing off his staff without some plain words. Without waiting for a reply to this letter, he wrote another.

William Ewing's Account for provisions, hired men and Squars [squaws] appears to be unauthorized by any person in this Country. Mr G. Chouteau informs me that he never empowered him under any authority which he possessed to incur such expenses to the U : States as [are] charged in his account.—And further says that he has always given such provisions and other articles to Mr Ewing as he thought the Public Service required, for which he either paid himself or included in the account of Rations settled with the Contractor.—

The public clamor at this place is very much against Mr Ewing; many unfavourable relation has been made of his conduct, such as purchaseing the Indians Guns for whisky and selling them again to the Indians for a high price.—Selling his corn to the Traders for trinkets for his Squar, hiring men on the behalf of the United States and sending them to work for his private benefit, making an incorrect report to me, &c &c. I am induced to believe from the report of Mr Bolvar [Boilvin] and others who are willing to swear that Mr W^m Ewing has behaved incorrectly and his example is degrading to the institution, and calculate to give the Indians an unfavourable impression of the public Agents in this Country. The Conduct of public Agents in this distant quarter, I fear will never be under sufficient check until there is a person to whom all are obliged to account residing in this Country, with full power and discretion to inspect their actions &c &c. . . ."¹²

This was convincing enough; the Secretary wrote to Clark on August 17, telling him to dismiss Ewing without delay "and settle his accounts whenever he shall produce authority for his expenditures with proper vouchers and due proof of fairness of the charges."¹³

The first try at "civilizing" the Sauk and Fox nations was over, and it was not all William Ewing's fault. The times were wrong. In later years, when the War of 1812 had ended and some of the rancor had gone out of relationships between the white men and the Indians, the farming experiment would proceed under more competent direction.

But in the winter of 1807-1808, all that William Clark could do was to start looking for a man the Sauk and Fox chiefs had always wanted—a blacksmith.

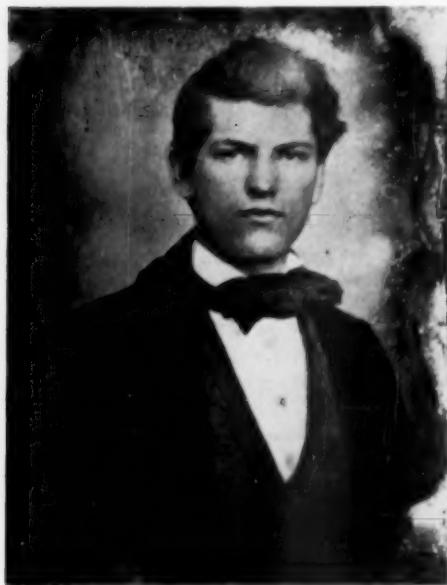
¹¹ Clark to Dearborn, June 1, 1807, *The Territorial Papers of the United States*, 14:126.

¹² Clark to Dearborn, June 22, 1807, in Coues, *The Expeditions of Zebulon Montgomery Pike*, 1:292n.

¹³ Dearborn to Clark, Aug. 17, 1807, SW, LS, Indian Affairs, B:328, National Archives.

Philander H. Standish (1835-1918)

The unsung heroes of American history are plentiful. Schoolboys can recite the accomplishments of a Whitney, a Morse, or an Edison and most college students know of the work of men like McCormick and Deere; but a host of inventors, from whose labors and inventiveness the more prominent have profited, are destined to



Philander Standish about 1857.

remain in obscurity. Often this is because the individuals in question were not ultimately successful in perfecting their inventions. This does not mean, however, that the contributions are any less important; inventiveness is basically an evolutionary process whereby the final synthesis is built upon one or more earlier innovations. Yet, few if any of the relatively unsuccessful inventors receive more than passing mention for the role they have played in advancing America's technology. Only too infrequently do their deeds become known. Such a man was Philander H. Standish, producer of a steam plow.

This man, a direct descendant of Captain Miles Standish, was truly a pioneer. About 1855, he left home in the East to take part in the mass exodus to the Far West. He traveled by sailing vessel around Cape Horn and eventually settled in the vicinity of San Francisco. He worked briefly on a farm and then took up shop work, at which time he began to design his steam plow. While working in California, he met and married Maria Gorham, whose family had made the overland journey by covered wagon from southern Wisconsin around 1850.

Standish's first plow was completed at Martinez, California, in 1867 and was subsequently patented in the United States, England, France, and Russia. Standish and his plow won awards at the Mechanics' Industrial Fair in San Francisco in 1868 and 1869. He tested and experimented on various terrains and soils, attracting the attention of O. C. Coffin, a miller of Contra Costa County, California. The latter agreed to finance the building of a second plow in Boston, with Charles F. Coffin, Boston business man, to serve as general agent. The partnership of Coffin and Standish was consummated on February 22, 1870.

In accordance with his agreement with the Coffins, Standish went to Boston to engineer and supervise the building of a plow similar to the California model. Upon completion of the project, the machine was shipped to New Orleans early in 1871 where it was tested on a nearby tract of cotton and cane land. The plantation owner, a General Davidson, was apparently favorably impressed; he supposedly asked Standish to build a special plow for his Poydras Plantation. Fate dealt cruelly with the career of Standish at this point; the General was killed in a railway accident before arrangements had been completed for the new plow. Further complications and discouragements caused Standish to interrupt his work on the plow in 1872 and to move to Missouri, where he perfected a chain-making machine and

entered that new business at Jefferson City. Although he continued to test his steam plow from time to time and never surrendered his dreams, he was unable to conclude the work successfully. He continued as a chain manufacturer in Missouri and Ohio until his poor business judgment resulted in the loss of his company at Cuyahoga Falls, Ohio, just before the turn of the century. While living out his final days in Cleveland with his daughter, the old inventor attempted to interest the United States Department of Agriculture in his steam plow (see letter dated May 30, 1917). He died on September 7, 1918, virtually unknown to the twentieth century world.

Philander H. Standish deserved a more prominent place in America's historical literature. He was among the first to recognize the farmer's need for a small inexpensive power plow; he realized that the earlier steam tractors, modeled after railway locomotives, were too cumbersome, too costly, for adaptation to the average American farm. While there was nothing unique about his inventive genius, the truly remarkable thing about his work was that he was his own designer, machinist, blacksmith, and engineer. Repeatedly he forged and fashioned new parts to replace defective or broken ones for his plows. He sketched improvements in small pocket

diaries or "day books"—developing a new cutter, a boiler, or a gear. He kept records on the performance of his machines, noting failures and suggesting improvements.

On the following pages appear a few of the letters of Philander H. Standish. They are presented in the thought that they will reveal some of the trials and tribulations which beset a pioneer inventor in the late nineteenth century. The letters have been printed in their original form, with no attempt to correct grammatical errors. The letters to his wife were written during the Louisiana experiments; his family was "boarding" with his half-sister in Grove City, Ohio, at the time. The "Boston folks" referred to in the second letter were O. C. Coffin and C. F. Coffin. The "Mr. Silver" was the agricultural editor of the *Alta California*, a West Coast paper. The letters are from the larger collection of F. Hal Higgins, Walnut Creek, California, who gathered over the years correspondence, "day books," photographs, drawings, blueprints, patents, and other items of interest concerning the Standish steam plow. The editors are deeply grateful to Mr. Higgins for his willingness to make some of his treasured materials available to the readers of *Agricultural History*.—C. C. J.

LETTERS OF PHILANDER H. STANDISH

(From the Collection of F. Hal Higgins)

"Poydras Plantation"
Below New Orleans, La
Feb 19th 1871

Dear Wife:

. . . The Steam Plow troubles are beginning to give way, one after another and I am gaining fast upon the difficulties. I am now ready to commence work as soon as the land is dry enough. Last Wednesday I tried the Plow, and it did some splendid work in very hard soil and gave entire satisfaction to the superintendent of the place and others looking on. I plowed but little as it was too wet. I have found and fixed the trouble of the Engines and made a great discovery in the plowing principle which I tested yesterday, and found it so far, a great saving in power, and am exceedingly pleased with the improvement. . .

P. H. Standish

St. Louis Mo June 22d 1871

Dear Wife

I leave here to morrow for grove City but shall stop on the way at Effingham to see my Aunt Upton and perhaps I will stop at Terry Haut Ind. I received your letter yestardy. If you have any lettrs for me keep them untill I return. I xpect to be home next tuesday aftrnoon—if I reach Columbus in time for the stage. All the folks are well here and treat me very kindly it's quite likely I shall come here to live and do business. I do not hear from the Boston folks but I telegraphed to day and may get a dispatch before I leave it's very warm here to day but I suppose is eaqually warm at Columbus. Mr. Baker and family of Columbus arrived here last night from California he says it's very dull time thare. I just got a dispach from C H Coffin. Want to know if I will come and see them of course I will not as I have said so often before. if they want any thing of me they must come and see me I will not go to Boston. Plow or no plow I will try something else Capt O C Coffin writes that he can get an order for a new plow for \$10000 coin but cannot get an advance I have not heard from him since I wrote and lent him the photographs so you can look for me home soon give my love to all

Yours as ever

P. H. Standish

Messrs Coffin & Standish
South Boston Mass

Grove City Ohio
Aug 1871

Dear Sirs

I herewith submit to you the following proposition and suggestions trusting that they will meet with your approval and acceptance. First let us draw a line over our difficulties and disagreements connected with our steam Plow buisness and let us commence anew. let the past go for a better future. I made a severe struggle to break away from the Steam plow bleiveing that it was injureing me, but it has become too much a part of my life I cannot leave it untill it becomes a complete success. and in order to make it such I will relinquish my interest in the patent retaining ten percent of the receipts of all sales of territory machines licenses etc to yourselves or others if you will furnish the necessary means and go ahead with the business building and perfecting the steam Plow and allow me a salary of three thousand dollars a year for my services. This arrangement will do away with the partnership contracts etc and give you entire controll of the buisness to form such a company as you see fit and I will have no word or say in the matter but will suggest and offer such improvements & inventions as you may see propper to accept.

Since makeing drawings for the supposed to be new machine I have thought much of a small cheap steam Plow believing the introduction of which would be much easier than a large & expensive one I know from the frequent conversations with farmers that they would invest in such a machine. although in time a large powerfull machin would come into use and prefered for large fields. A small steam plow should have sufficient power to drive a threshing machine and fill all the requirements of a portable steam engine. The objections urged by farmers to large machines are first the great cost. trouble of transportation. no ordinary bridge will sustain them. thier unwieldy appearance. difficulty of getting water. and a certain hugeness that seems to put them out of their reach etc. These exceptions are so general that they should have some weight with us. And in order to make sales would it not be policy to conform some

what to their desires in that line. Allthough to me thare is hardly a limit to the size that the machines may be made depending however upon the condition of the land they are to be used upon. A small machine will work upon all kinds of land nearly among stumps & trees and on small fields. While a large one wants plenty of room plenty to do and a large sum of money to pay for it and must be used in the Forrest. small ones might be used in all of the middle states and even in new England

P. H. Standish

Messrs John Davidson Hill and Co

Saint Louis Mo

December 17 1872

Dear Sirs

I have not been successfull so far in obtaining assistance from my Partners in Boston to fix up the Steam Plough. I shall now try to purchase their interest in the Patent, or at least the Plough now in your posession. Now I wish to make this arrangement with you, in the event that I succeed in obtaining the Boston interest, to be allowed by you to repair and work the machine untill I could get an opportunity to sell it, or from its earnings pay you your claim against it as it is it works up as a steam plough or traction Engine, but if remodeled it would be valuable as either—. I am firmly of the belief of success if I can get a chance to work it over according to my own views and think I could find a party—to join me by giving them a liberal interest in the machine.

What encouragement can you dispose to give me in the matter?

Do you have any communications with the Boston Coffins about the machine?

It seems that if any thing is to be done with the steam plow on your plantation I will have to do it on my own account & expense. Your letter was sent to the Coffins at Boston who are part owners in the machine immediately after receipt from you perhaps I can make some arrangements with the Boston men for their interest, in such event would you allow me to take the machine fix it up or sell it and wait upon me to pay your claims against it untill I could sell it or by it's earnings pay you possibly I might have to ship it here & build it over & try it on prarie soil but I think I can make it do on a cane plantation by making it work the cane rows & changing the gearing.

Something must be done about it this month I wrote the Coffins saying that I would turn it all over to them if they would settle the claim you hold, now if they mite do the same by me and you mite favour me I will work it out Please let me hear from you soon

Yours truly

P H S

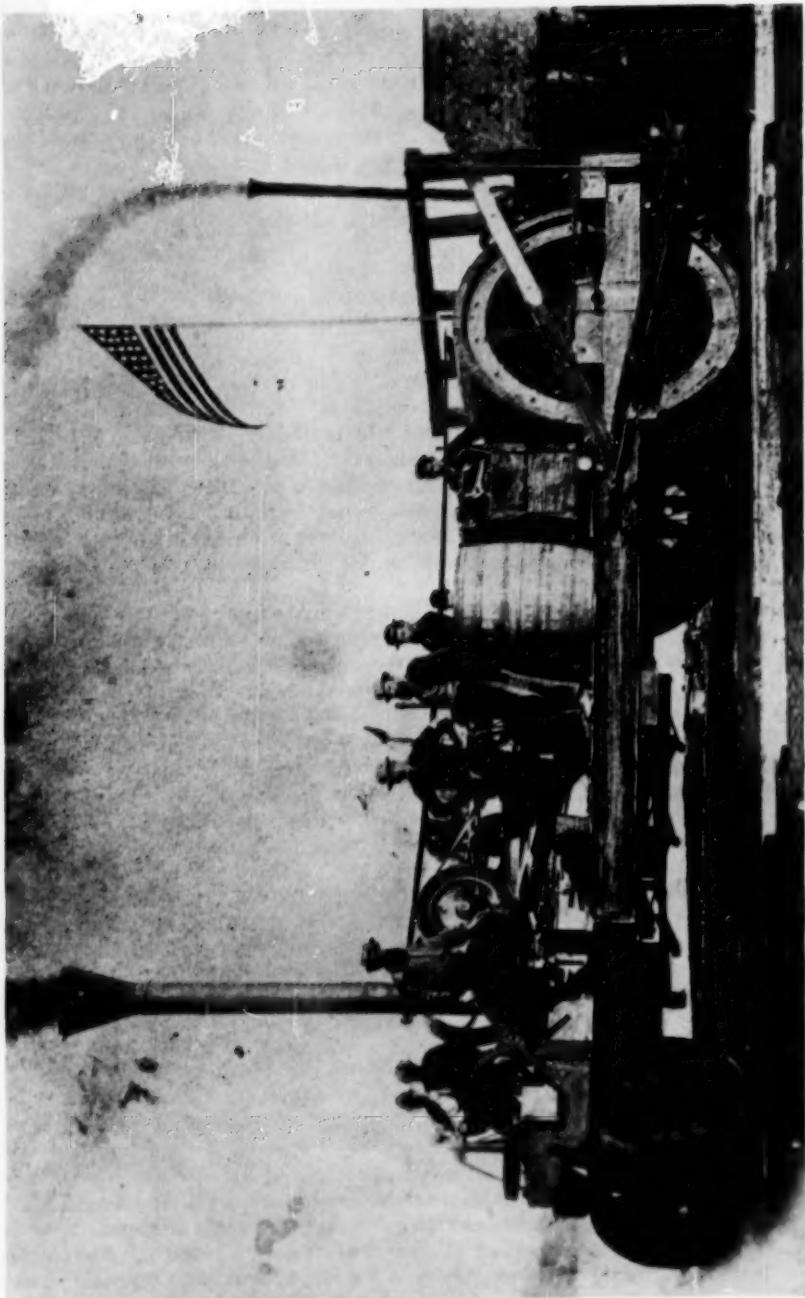
Mr. Silver

Saint Louis Mo

May 27 1873

Dear Sir

I have but lately returned from the state of Louisiana. Whare I have been (for the last four months) experimenting with my *Steam Land Dressing* machine. Knowing heretofore of your faith in my system of boreing and working up the soil for planting purposes I thought it would not come amiss to let you know what progress had been made towards perfecting the machine. I consider that I am through with the experimental part of the work and that I have obtained all the practicable information



Standish's "Mayflower" tractor during its first trial at Martinez, California, January 1868. This steam-powered machine put in 100 acres of wheat that year in Diablo Valley, then was taken to Petaluma to break sod on a custom basis at five dollars per acre.

requisite for the working and making of successfull machines for the purpose of steam plowing. The plowing or boreing up land for cane planting I found the most difficult of any work that I ever came across with my machine. You know that the cane is planted in rows of six or seven feet apart and the ground bedded up a foot or more the plowing is consequently done up and down the rows, but when the machine was made to properly track the rows it was not difficult to break up this stubble although, the knifes would go down 18 & 20 inches deep in the ridges. Whare I worked the land was a heavy black waxy soil not unlike the adobe soil of California. It was very stiff and required 4 mules to a 10 inch plow with a plow man & a driver—and the average amount of work done was one & one half acres plowed per day. The great trouble encountered with the steam machine, although but 18 feet long was the frequent turning the drain ditches occurring every six or seven hundred feet while the side ditches were about 200 feet apart, making as you see very small patches of land to work a 30 horse power steam machine upon, but with my improved turning gear the steamer doubles it self up in a wonderfull short compass you will remember perhaps that the first machine I made in Cal. had cutter holders of three feet in diameter, and six cutters to each upright shaft. thare being 4 uprights making a swath 12 feet wide well it was thought that but two feet diam of cutter-holders would be bettr with 4 knifes in each, making the same number to the width of feet cut (one to each 6 inches) but it was found that a two foot circle would not deliver the dirt freely but would drive up and bank it ahead thareby consumeing much of the power of the Engines & Well the fact is a circle over three feet diameter is bettr than one under.—but of course thare is a limit—and a propr-medium is about 42 inches or 3½ feet diam. the form and angle of the cuttr was a very important matter.

The old machine never had a proper shape cutter nor were they set right. The angle of 45 degrees and a shearing lip raises up the subsoil beatifull the returning cut or harrowing principle is thareby greatly facilitated and the power required to work the cutters is lessened. the Knifes are now very strong obstructions if met with are thrown out & the machine stops. no more *breakage* thats played out every thing is strong enough to with stand the power of the engines and the Knifes on cutters dont run so fast as formerly, of course I did not know at first what speed to give them haveing no data to go by so it was cut & try, and I gave them 4 inches travel in the circles to one inch travel of Engine piston now I have them 1½ & 2 inch to one inch travel of piston. you see what leverage I lost. now I give my engines the long end of the *lever* (?) as it were and the earth must come up. All of my calculations of advance of machine and travel of cutters are made from piston speed and are of running speeds to suit the differrent nature and conditions of soil, as I found while plowing on Poydras Plantation below New Orleans that at the lower-ends of the runs or cuts would be heavy soil while the uperends were light sandy and easily worked this all-most constantly changing condition of the soil requires a corresponding change of advance of machine over the land and to adjustment of the power to suit although the speed of the Engines remained the same and also the speed of cutters nearly, but a variing thickness of the slice or crescent of earth cut to each knife. the thinner the slice & slower the advance the easier of course for the engines. and with this conveinient adjustment, which is in command of the Engines, such heavy and powerfull Engines and boiler are not required you will from your acquaintance of my first machine readily perceive the importance of a variable advance or travel of the Locomotive for instance if the cutters came in contact with a piece of very hard land and each cutter was taking a feed of 4 inches (the thickness of the crescent cut) and the Engines were found to labor heavily by instantly reducing the feed or cut to three or two inch thickness of crescent. will relieve the engines untill the hard land is past

through when the change can be made back to what the power will easily work through. unlike drawing a gang of plows or similar implements whare in case of to great resistance the plows would have to be raised up and the dept of the plowing lessened. We maintain a uniform depth, and even do finer cutting when hard land is met with. The great advantage I have in my machine over any Traction engine drawing plows is thare is no more traction required to move the cutters when working than is needed to move the Locomotive over the ground when the cutters are out. tharefor I have but the weight of the machine to draw, and I apply enough of the engine power for that purpose which amounts to about one tenth and the ballance is thrown upon the cutter train. and the soil is worked up just as it should be and the *Foundation* for a crop is made at first. I was very doubtfull about being able to plow deep enough but I find that thare is no trouble 10, 12, 15 & 20 inches deep can be cut by useing a proper form of cutters and advance. of course the deeper you cut the slower the machines move over the ground, but the finer the work. Plowing and prepareing the soil for planting is a question of mechanical force, thare is a limit to the dept of horse plowing and it is now 6 inches but steam will double the dept and work soil up fine in one oppration leaving a suitable subsoil floor for the penetration of roots & water while the action of the common plow then makes a hard glossy floor impervious to both.

a soil finely & deeply pulverized with a corrugated bottom or floor to rest on will drain bettr. in wet seasons and stand drouhts better in dry a field plowed 4 or 5 inches deep the usual dept of plowing with a common horse plow and then harrowed down finely look well on the surface, but take a spade or a shovel and uncover the work, and you will find it a cheat.

Now haveing completed my experimenting I am ready for orders for machines and can furnish an eight foot cut machine with two four feet circles. 8 cutters in each with a pair of 7 x 10 engines upright boiler 240 feet heating surface, tanks holding 200 gal water improve turning geer, variable speed adjuster strong & compact, with attachment to transmit power for others purposes than plowing such as driveing grinding mill threshing machines etc weight—about Six tons for the sum of \$5,600 capable of working up from 5000 to 16000 square feet-per-hour-can plow any dept from 4 to 12 inches and deeper if necessary. A larger machine cutting a swath of 12 or 14 feet would cost neirly \$10,000. would work in proportion to its width

The large machine would be just the thing for companies farming on a large scale or plowing lands for others but an 8 foot machine is more easily moved over bridges & bad passages and will drive the largest threshing machines and git-up and travel with the whole apparatus

Most Respectfully Yours

Address

Philan H Standish
512 North Main Street
Saint Louis Mo

Cleveland, Ohio, May 30, 1917,
1690 Crawford Road.

The Commission of Agriculture,
Washington, D. C., U. S. A.

Gentlemen :—

I wish to call your attention to the CALIFORNIA DEEP TILLER ROTARY PLOW.

For preparing the soil, for raising large crops, it has no equal. This machine has been out of sight and practically unknown for many years owing to peculiar circumstances.

This California Steam Plow has tilled and prepared the soil of hundreds of acres of land from which large crops of wheat and sugar-cane was grown.

The first steam plow of the kind was made in Martinez, Calif. by Coffin & Standish, (millers) in 1868, and patented in the United States, England, France and Russia. The plow was on exhibition at the California State Fair and at the San Francisco



Rear view of California No. 2, built in 1870, showing rotary cutters. Standish is in right foreground, holding one of the blades.

Mechanical Exhibition, where it drew prizes and gold medals from the Mechanics Institute.

After many trials and improvements it was put to work on the Kilihor Ranch in Contra Costa County. The farm contains a thousand acres of level, heavy, gravelly adobe soil, considered good land for wheat and barley. Four hundred acres was plowed with the common plow drawn by horses. Six hundred acres was plowed with the Standish Steam Rotary Deep Tiller seven to eight inches deep and measuring ten to eleven inches deep owing to being finely pulverized and thoroughly mixed with the top and bottom soil which needed no harrowing.

The grain (wheat) was sown broadcast on the steam plowed and the horse plowed at the same time and harrowed in together. The line of demarcation between the Rotary Steam plowed and the common plowed soil showed distinctly as the grain on the Rotary plowing came up first and grew faster with a darker green. The most surprising part was the yield of wheat at harvest time,—2000 lbs. to the acre for the common plow and 4000 lbs. of wheat for the Steam Rotary Plow.

The Steam Rotary Plow was taken across the Bay to Sonoma County and put to work on the Petaluma flats on the worst kind of hard, dry adobe land filled with anise roots, soap roots and briars. No common plow could plow this ground. This land belonged to Mr. Hill, the banker at Petaluma. It was test trial for the Steam Rotary, and after putting in a new set of twenty-four coulters and strengthening other parts, the old Mayflower Steamer made short and good work of the Petaluma farm at the rate of twelve to fifteen acres per day. Part of the land was seeded broadcast and harrowed, and part was seeded with a grain drill drawn behind the Steam Plow same time when plowing. There were several hundred acres plowed for which Mr. Hill paid five dollars per acre and was well pleased as were all who witnessed the trials, and several wanted to buy plows; but the Company concluded to go east and make plows, and they did, and the old wooden wheeled steam plow was demolished.

Description of the old MAYFLOWER STEAM ROTARY PLOW

It weighed about eight tons, was twenty-four feet long and twelve feet wide. The frame was made of 4 6 x 12 timber Oregon Pine twenty-four feet long bolted at the end of a crossbeam 6 x 12. The two hind drivewheels were thirty-two inches wide and eight feet diam. all wood but the axle and the large internal gear—bolted to the rim and spokes. The front wheel was eighteen inches wide and four feet diameter, made of wood. The power was an upright boiler four feet diameter and seven feet high containing 110 $2\frac{1}{4}$ inch tube engines, two horizontal 8" x 14" cylinders, thirty to forty horse power. The frame in the rear held the four upright shafts upon which the rotary cutter and coulters were secured. The wheel at the lower end of the upright shafts was three feet diameter, having six arms; at the end of each arm was clamped an upright coulter or knofe pointed with a lip at the heel or back part of the coulter somewhat like the mould board of a common plow, but very small. This lip throws up the subsoil as the coulter revolves rapidly going in their three foot circles from five to eight hundred feet per minute; the knives incline about twenty degrees back from the point. There are four three foot circles, six knives to each circle, twenty-four knives in all. The swath or furrow is twelve feet wide; each knife cuts a crescent $1\frac{1}{2}$ " $2\frac{1}{4}$ " $2\frac{1}{2}"$ $3\frac{1}{4}$ " thick more or less, according to the feed given them or the advance of the Locomotive. There are five feeds. The frame holding the four upright shafts with the coulters attached is hinged to the main frame of the plow, and made to raise and lower being

carried on a pair of cartwheels when plowing but lifted upon the main frame when transported from place to place.

This description applies in part to the old first plow, and also partly to the plow made in Boston. The Boston plow had five upright rotary two foot circles, four coulters each, and cut a ten foot swath. It had six foot drivewheels two feet wide and two front steering iron wheels 18" wide x 4' diameter. The whole machine was about fifteen feet long and quite compact; much lighter than the California plow. It had a better boiler—upright 100 2" tube, was six feet high, had good square firebox and twenty-four $\frac{3}{4}$ inch circulating tubes in the firebox. The machine had chain drive and differential gear. In many respects it was a better machine than the old plow, but the two foot plowing circles although doing good work in the ground, took more power owing to too much pressure of the flat of the knife against the soil in the two foot circle than would be in a larger circle, and some other defects which might have been remedied.

Owing to the lateness of the season when the Plow was finished, it was decided to take it south and operate it during the winter on cane-sugar land, instead of the grain or corn fields out west.

So the Plow was shipped to New Orleans and put to work on the General Davidson Poydras Plantation, ten miles below the city. Its first work was to break up an old cotton field, stocks and all, which it did most effectually, cutting up the stock, disintegrating the surface trash, bringing up the subsoil mixing and pulverizing the ground to the planters' astonishment and satisfaction.

The machine was then sent to the cane fields which were surrounded with ditches to every few acres, and the cane had been planted in rows six feet apart and hilled up fifteen to eighteen inches making pretty rough travelling one way across; but by plowing lengthwise and overlapping the ten foot swath onto the old six foot furrows, we made good and deep work some 16" to 18" deep.

The Poydras was an old Spanish plantation containing two thousand acres and the soil was heavy and pretty well worn. The steam plow going so deep brought up much subsoil mixing it with worn topsoil and the thorough pulverization, no harrowing being needed, made the planting easy. As the overseer said, never before had they laid the cane stocks in the six foot furrows with as little labor, and the crop of cane produced was greater than known before,—This was learned by the writer on a visit to the plantation the next season.

Before the plowing was over it was decided not to use the ten foot twenty-four inch circles, or the present plow; but to make a new machine tracking eight feet and plowing eight feet with two 4 ft. circles, with eight strong coulters, and General Davidson gave such an order. While preparations were being made to make the new plow, the sorrowful part came,—General Davidson was killed in a railroad accident.

The whole project came to a standstill. The discouragement was so great, delay followed delay. So much money had been spent, so much time had been lost, the interested parties living wide apart thinking some day we would take it up again, we nearly all drifted into other businesses and the Steam Plow was about forgotten except at times by someone who could not entirely forget what he saw and did in California with the machine working so well at times and producing large crops. There was a mystery about it which no one would believe. If such a crude affair could produce such results, what would or could a machine do made on better mechanical lines; and there is no law against doing better.

REMINISCENCE.—Col. Silver, Agricultural Editor of the *Alta California* and Col. Warren, Editor and owner of the *California Farmer*, were following in the rear of the old plow, watching the action of the first revolving cutters in the earth and noticing the soil squirm behind them, asked the writer what caused the commotion.

Notice was given the engineer to speed up, which he did and the points of the cutter were exposed to view, and to their astonishment streams of electricity were seen at the cutters point and in the ground. Electricity as a fertilizer was discovered.

Now, Your Honor, what I desire is that the Agricultural Department of the Government will promote the Rotary Plow.

I have made many improvements in the Rotary Plow lately and have some patents pending therefor, and am planning for more so that it may be applied to the Gasoline Tractor and used thereon as well as the common plow,—as it can be easily attached and removed as well, and may become convenient and desirable for the many makers of plowing tractors.

Having made this matter much study, I wish to turn over to the Agricultural Department of the Government all my patents and improvements, so that the Department may induce the many makers of tractors to apply the Rotary to their machines and thereby promote its use by the Farmer.

The first Patents covered the claims of plows revolving in a horizontal plane and some other conveniences as to gearing and attachments; but there are many other essential contrivances that were not patented, and which may be, and by some that would worry the user if he was not protected.

I ask no compensation for the patents and improvements, but desire that the Department will create a commission for promoting the use of the Rotary Plow. Would like an order for a demonstrating Rotary Plowing Machine, attached to a gas driven Tractor, plans of which I would be pleased to furnish you on demand, and further descriptions.

Being a mechanical engineer, an old inventor; having made and patented reapers, mowers, gang plows, threshing machines, chain making and other machinery, as well as, building mills, factories etc., I feel that I am competent to make you a most successful ROTARY PLOWING MACHINE.

Very respectfully,

P. H. Standish,
1690 Crawford Road
Cleveland, Ohio.

Fig History In The New World

IRA J. CONDIT

Accounts of the history of fig culture in the New World are found in publications accessible only in widely separated libraries. This article attempts to bring together some of the more important items of historical interest and will conclude with personal observations made by the author in recent years on fig varieties collected at early settlements in the eastern United States.

The oldest fig tree in the New World is undoubtedly the Pizarro tree growing in a patio of the governor's palace in Lima, Peru. This city was founded in 1535 and it is presumed the fig tree was brought from Spain and planted a few years after the construction of the palace. It is probably, therefore, over 400 years old. The original trunk has long since perished, its place being taken by two main trunks and a few suckers. The Pizarro tree produces black figs corresponding to Negra (San Pedro), as described by Tamayo.¹ Some 50 years after the conquest of Peru, Acosta wrote "there growes apples and peares but not abundantly; there are but few plumbs but abundance of figges, chiefly in Peru."²

It was not into Peru, however, that the first introductions of figs into the New World were made. Puente y Olea found records in Seville, Spain, that European varieties of figs were first sent to the West Indies in 1520.³ Oviedo y Valdes, whose *History* was published in 1526, reported fig trees growing in various places on the Island of Espanola, representing the variety called Godens in Castille and Burjassotte in Aragon and Cataluna.⁴ Previous to the retirement of the Spanish authorities, culture of grapes and figs was prohibited in Cuba except for one vine or tree for each family in order to prevent competition with the home industry of Mother Spain.⁵ It is recorded that the fig tree was introduced into Mexico by Cortez in 1560.⁶

The exact date of the first planting of fig trees in North America by the colonists

is not definitely determined. But in a letter to the King from Havana on February 17, 1577, Martinez wrote: "And what may be truthfully told your Majesty is that in Santa Elena (Parris Island, South Carolina) I planted with my own hands grape vines, pomegranate trees, orange and fig trees."⁷ Two years later Menendez wrote from "San Agustin," Florida: "There are beginning to be many fruits of Spain, such as figs, pomegranates, oranges, grapes in great quantity."⁸

It was about 40 years later that fig trees were introduced into Virginia. The ship Concord reached Virginia from the Bermudas in December, 1621, writes Alexander Brown, with "two large cedar chests wherein were fitted all such kindes and sortes of the country plants and fruits as their land had as figgs, pomegranates," etc.⁹ Brown also relates that King James I caused his servant, John Bonnel, a Frenchman, to prepare "A Treatise on the art of making silk — together with instructions how to plant and to dress vines and to make wine and how to dry raisins, figs and other fruits."

Apparently the fig trees brought from Bermuda thrived, for Captain John Smith

¹ Domenico Tamayo, *Tratado de Fruticultura* (Barcelona, 1920).

² Joseph Acosta, *The Naturall and Morall Historie of the East and West Indies*, translated by E. G. Sims (London, 1590).

³ Manuel Puente y Olea, *Los Trabajos Geograficos de la Casa de Contratacion* (Sevilla, 1900).

⁴ G. F. Oviedo y Valdes, *Historia General y Natural de las Indias*, first published, 1526 (Madrid, 1851-1855), 1:288.

⁵ Leon J. Canova, *Cuba, Department of Agriculture, Commerce and Labor* (Havana, 1910).

⁶ F. Unger, *Plants Used as Food by Man*, U. S. Commissioner Patents Report (Agriculture) 1859, 1860, 299-362.

⁷ Bartolome al Rey Martinez, letter to king, in Jeannette T. Connor, *Colonial Records of Spanish Florida* (1577), 1:245.

⁸ Pedro Menendez, "A la Audiencia de Santo Domingo, San Augustin," in Connor, *Colonial Records of Spanish Florida*, 2:227.

⁹ Alexander Brown, *The First Republic in America* (Boston, 1898).

wrote in 1629 that "vines, figges, and other fruits some have planted that prospered exceedingly; but their diligence about tobacco left them to be spoiled by cattel, yet now they beginne to revive."¹⁰ Mistress Jane Pierce came to Virginia in 1610 with her husband, Captain William Pierce. She was "an honest, industrious woman," wrote Captain Smith, and "saith shee hath a garden at Jamestowne, containing three or four acres, where in one yeare she hath gathered neere a hundred bushels of excellent figges." In 1642, Stephen Webb planted "apricockes, ffigs, and pear trees" along the James River.¹¹

William Hilton reported that by 1633 natives along the Carolina-Georgia Coast, even before much contact with the English, were growing and extensively using peaches and figs.¹² Clayton Hall wrote that in Maryland "apricocks, figgs and pomegranates prosper exceedingly."¹³ In 1666, Robert Sandford told of "some store of figge trees very large and faire both fruite and plants," on Broad River, South Carolina.¹⁴ Captain Ash also found fruit trees such as the fig in great abundance in the Carolinas.¹⁵ The name New Smyrna was given to a town in Florida where Dr. Andrew Turnbull established in 1763 a colony of 1500 Greeks and Minoreans who naturally cultivated fruits familiar to them such as the fig and olive.¹⁶ Some of these trees still remained at New Smyrna in 1821.

During the 18th century, various writers told of fig culture and its extension north and westward from the coast. Brickell wrote of two sorts of "figg tree," the greater which bore small fruit, and the lesser, more like a bush than a tree, with considerably larger fruit.¹⁷ Fig trees had been introduced to Mobile, Alabama, from Provence by 1720.¹⁸ William Bartram wrote in 1791 about the ruins of ancient habitations some 40 miles north of Mobile where there were large fig trees with fruit "the shape of pears and as large, and of a dark, bluish-purple color."¹⁹ A "Gentleman of the old Natchez Region" was Benjamin Wailes,²⁰ whose favorite fruit was figs. The days of the first and last mess of

figs were carefully noted in his diary; in 1857 these were July 13 and September 22.

Early in the nineteenth century, Estwick Evans found gardens near New Orleans "elegantly ornamented with orange and fig trees."²¹ About the same time, Thomas Nuttall journeyed into the "Arkansa Territory" and found fig trees at Natchez, also orchards of figs near New Orleans.²² Berquin-Duvallon traveled in Louisiana and reported in 1806 that "the orange, fig, peach, pear, apple, and vine grow there but they neither conciliate the eye nor the taste."²³ On the other hand, John Bartram found few fig trees in Florida and South Carolina and even remarked: "I can't but admire ye indolence of these people in not planting fig and pomegranate."²⁴

¹⁰ John Smith, *Travels and Works*, edited by Edward Arber (2 vols., Edinburgh, 1910), 2:627, 887, 905, 907.

¹¹ *William and Mary College Quarterly*, 6:121.

¹² Lewis C. Gray, *History of Agriculture in the Southern United States to 1860* (2 vols., Washington, 1933).

¹³ Clayton C. Hall, *Narratives of Early Maryland* (New York, 1910).

¹⁴ Robert Sandford, "Relation of a Voyage on the Coast of the Province of Carolina," (1666) in *Narratives of Early Carolina*, edited by Alexander S. Salley (New York, 1911).

¹⁵ Thomas Ash, "Carolina; or a Description of the Present State of That Country," (1682) in B. R. Carroll, *Historical Collections of South Carolina* (New York, 1836), 2:60-120.

¹⁶ James G. Forbes, *Sketches, Historical and Topographical of the Floridas* (New York, 1821).

¹⁷ John Brickell, *The Natural History of North Carolina* (Dublin, 1737).

¹⁸ Peter J. Hamilton, *Colonial Mobile* (Boston, 1910).

¹⁹ William Bartram, *Travels* (First edition, 1791) (New York, 1940).

²⁰ Charles S. Sydnor, *A Gentleman of the Old Natchez Region*, Benjamin L. C. Wailes (Durham, N. C., 1938).

²¹ Estwick Evans, "A Pedestrious Tour," in *Early Western Travels*, edited by R. G. Thwaites (Cleveland, 1904).

²² Thomas Nuttall, *Journal of Travels into the Arkansas Territory* (Philadelphia, 1821).

²³ Berquin-Duvallon, *Travels in Louisiana and the Floridas in the Year 1802* (New York, 1806).

²⁴ John Bartram, "Diary of a Journey, 1765-1766," annotated by Francis Harper, American Philosophical Society, *Transactions*, n.s. 32:1-120 (1942).

There seem to be contradictions in the seventeenth century records of Virginia as given by Robert Beverley and by Philip Bruce. The first found that "the almond, pomegranate and fig ripen very well, and yet there are not ten people in the country that have any of them in their gardens."²⁵ Bruce, on the other hand, reported figs "in all the gardens, and in season large quantities went to decay because there was no way of using the superfluity."²⁶ In South Carolina, according to Cornelius Walker, the premium list of an 1807 Fair, included dried figs, the fruit of which "grows easily and luxuriantly—but there is no recorded effort of its being dried in marketable quantities, and it has never become, as it might, a staple crop."²⁷

Thomas Jefferson, who had many other horticultural interests, was a devotee of the fig. While in France in 1787 he wrote a letter to a friend stating that:

The fig and mulberry are so well known in America, that nothing need be said of them. Their culture, too, is by women and children, and therefore, earnestly to be desired in countries where there are slaves. In these, the women and children are often employed in labors disproportioned to their sex and age. By presenting to the master objects of culture, easier and equally beneficial, all temptation to misemploy them would be removed and the lot of this tender part of our species be much softened.²⁸

Jefferson's interest in figs is further shown by the fact that he introduced three varieties from France for trial. According to Edwin Betts, the Marseilles fig brought from France was regarded by Jefferson as incomparably superior to any fig he had ever seen.²⁹ This variety was distributed widely by Jefferson but its exact identity is in doubt, although it may be the same as Blanche (White Marseilles).

From these early beginnings, fig trees were distributed and planted far and wide. As Hedrick states, "From the earliest settlement in the Gulf States, northward to Virginia and even to Maryland, fig culture was carried on with the greatest optimism."³⁰ One enthusiast was Thomas Affleck, who in 1842 visited Washington, Mississippi, where he found "figs in perfection,—certainly the greatest luxury in

the fruit line I ever partook of."³¹ By 1844, Affleck had an orchard of 50 trees and six years later he reported that of the 20-odd sorts in his orchard, the Celeste or Celestial was the general favorite.³² His *Rural Almanacs and Plantation and Garden Calendars* issued from 1851 to 1854 offered nursery trees of some 15 varieties for sale from 25¢ to \$1.00 each.

Fig trees were planted and are still to be found at practically all the historic towns and estates of Virginia and Maryland such as Williamsburg, Wakefield, and Stratford Hall. A visitor to Wakefield in 1851 found in the midst of a 200-acre cornfield, an old brick chimney, a mammoth fig tree (which some think may have been a hackberry) and a stone slab inscribed: "Here the 22nd of February, 1732, Washington was born."³³ Washington Irving visited Wakefield about 1857 and reported that not a vestige of the house remained, but "two or three decayed fig trees with shrubs and vines, linger about the place."³⁴ However, Hoppin told of still another visitor who in 1882 found a fragment of the chimney and also "a dense thicket of shrubby fig trees covering a circular space of nearly fifty feet in diameter, thickly matted together, the largest of which are three inches at the base

²⁵ Robert Beverley, *The History and Present State of Virginia*, first published, 1705 (Chapel Hill, N. C., 1947).

²⁶ Philip Bruce, *Economic History of Virginia in the 17th Century* (2 vols., New York, 1935).

²⁷ Cornelius Walker, *History of the Agricultural Society of South Carolina Founded August 24th, 1785* (Charleston, S. C., 1919).

²⁸ Everett E. Edwards, *Jefferson and Agriculture*, U. S. Department of Agriculture, *Historical Series*, no. 7, 1943.

²⁹ Edwin C. Betts, *Thomas Jefferson's Garden Book* (Philadelphia, 1944).

³⁰ U. P. Hedrick, *A History of Horticulture in America to 1860* (New York, 1955).

³¹ Thomas Affleck, Letter, June 30, *American Agriculturist*, 1:153 (1842).

³² Thomas Affleck, Letter, March 5, *American Agriculturist*, 3:182 (1844).

³³ Charles A. Hoppin, "The House in Which George Washington Was Born," *Tyler's Quarterly Historical and General Magazine*, 8:73-103 (1926).

³⁴ Washington Irving, *Life of George Washington* (5 vols., New York, 1857-1860) 1:17.

and eight to ten feet high."³⁵ George Washington grew fig trees on his Mt. Vernon estate, for in 1930 Edith Sale stated that a row of fig bushes stood beside the box hedge and "doubtless the children after lessons would delight in their abundance."³⁶

Stratford Hall, home of the Lee family, also had its garden with fig and other fruit trees. In her "Journal of a young lady of Virginia," 1782, Lucinda Orr wrote the following: "Cousin Nancy and myself have just returned from taking an airing in the Chariot. We went to Stratford, walked in the Garden, sat about two hours under a butifull shade tree, and eat as many figs as we could."³⁷ On the other hand, Margaret Smith reported this conversation over a Washington menu in 1835: "No nuts, raisins, figs, etc?" "Oh, no, no, ma'am, they are quite vulgar."³⁸

At least three horticulturists in the northern tier of states became so enthusiastic that they published circulars about fig culture and offered many varieties for sale. One was James Worthington of Chillicothe, Ohio, whose "Manual" appeared in 1869.³⁹ His father had obtained fig trees from Louisiana in 1815 and the son had for more than 30 years experimented with various methods of winter protection. The second enthusiast was Martin Benson of Swanwick, Illinois, who stated in 1886 that the fig excelled all other fruits for the northern states and that its culture was no longer an experiment.⁴⁰ A four-page circular by G. F. Needham of Washington, D. C., appeared in 1879, with this statement: "no other crop can be raised which will give so certain and so large returns in our Middle and Northern States, as that delicious fruit, the fig."⁴¹ Many other records of productive fig trees north of the Mason-Dixon line are available but only one more will be given here. An anonymous writer in 1845 reported that Dr. Dwight, formerly President of Yale College, grew figs successfully in the open garden at New Haven.⁴² Today many individual fig trees are still growing, often with elaborate winter protection, in such cities as Philadelphia and New York, and

even in some of the New England States.

While some of the historical accounts already cited indicate successful culture of the fig tree in the southeastern United States, for various reasons it has not become there a crop of commercial importance. P. W. Reasoner reported that J. K. Russell of Olustee, Florida, set out a fig orchard of 30 acres but destroyed it after the trees came into bearing on account of labor costs and inability to meet foreign competition, while S. B. Walls of St. Augustine started preserving figs, 60 bushels a day, but gave it up as an unsuccessful venture.⁴³ A 20-acre planting in Florida reported by W. T. Swingle was ruined by a late freeze.⁴⁴ But in 1910 F. C. Reimer said he knew of one acre of figs at Raleigh, North Carolina, which "during the past five years netted the owner greater returns than any acre in other fruits in the eastern half of the State."⁴⁵ As H. P. Gould reported in 1919, fig trees could be seen growing almost everywhere in the fig belt east of the Mississippi River, but in most cases only near buildings or in door-yards and gardens.⁴⁶

³⁵ Hoppin, "The House in Which George Washington Was Born."

³⁶ Edith S. Sale, *Historic Gardens of Virginia* (Richmond, 1930).

³⁷ Mrs. Lucinda Lee Orr, *Journal of a Young Lady of Virginia* (Baltimore, 1871).

³⁸ Margaret B. Smith, *The First Forty Years of Washington Society* (New York, 1906).

³⁹ J. T. Worthington, *Manual of Fig Culture in the Northern and Middle States* (Chillicothe, Ohio, 1869).

⁴⁰ Martin Benson, *Guide to Fig Culture in the Open Ground at the North* (Swanwick, Ill., 1886).

⁴¹ G. F. Needham, *Fig Culture at the North a Success* (Washington, 1879).

⁴² "Figs at New Haven," *Indiana Farmer and Gardener*. Also in *Western Farmer and Gardener*, 5:270 (1845).

⁴³ P. W. Reasoner, *Tropical and Semi-tropical Fruits*, U. S. Department of Agriculture, Division of Pomology, *Bulletin*, 1:7-110 (1891).

⁴⁴ W. T. Swingle, "Fig in Florida," *Florida Horticultural Society, Proceedings*, 6:51 (1893).

⁴⁵ F. C. Reimer, *Fig Culture in North Carolina*, North Carolina Agricultural Experiment Station, *Bulletin*, 208:187-206 (1910).

⁴⁶ H. P. Gould, *Fig Growing in the South Atlantic and Gulf States*, U. S. Department of Agriculture, *Farmers' Bulletin*, 1031: 1-45 (1919).

West of the Mississippi River, fig trees are found growing in a wide area from Texas to Arizona and California, southern Utah, north to Washington. The commercial preserving of figs in Texas was started by J. C. Carpenter⁴⁷ who found a few Brunswick (Magnolia) trees growing near Houston in 1900. He settled at Aldine, established an orchard of 23 acres, and from 1902 to 1904 put out preserved figs in individual jars for dining-car service and hotels. At Hurricane, Utah, a pioneer resident, Amos Workman, remembered seeing fig trees growing nearby in 1866, during his boyhood days. Later he planted trees of several varieties which produced well if the trees escaped winter injury. About 1928 trees of Franciscana (Mission) with trunks up to 18 inches in diameter, froze back to the ground. As pointed out by J. T. Woodbury, however, fig trees do thrive in such favorable localities as Toquerville, La Verkin, and Hurricane, Utah.⁴⁸

A pioneer grower farther north is Bert Amend, Portland, who since 1916 has tested 40 or 50 varieties of figs and, from his Willamette Fig Gardens, has distributed thousands of young trees in Oregon and Washington.⁴⁹ According to Joseph Gaston, fig trees were found in abundance near Fort Vancouver, Washington in 1836.⁵⁰ Scores of trees have long been grown near Seattle, especially on Vashon Island, but the combination of occasional frost damage and rainy weather in late summer often makes production of fresh figs decidedly unsatisfactory. An account of the unsuccessful attempt to grow fig trees on Vancouver Island, British Columbia, is given by T. A. Sharpe.⁵¹ The Journal of Don Francisco Marin, as reviewed by H. C. Wyllie, tells of fig and other subtropical fruit trees being planted on January 11, 1813, in Hawaii.⁵²

In the central valleys of California, however, the fig industry is of great commercial importance. The early history of fig plantings in California has been given by Wickson,⁵³ Eisen,⁵⁴ Condit,⁵⁵ and by many others and will not be reviewed here. Since the first trees came from Mexico via Baja

California, a few references to these two sources will be given. Figs of Spain are mostly of the Common type, without fertile seeds, and the Mission Fathers brought cuttings or rooted plants of distinct varieties such as the Franciscana (Mission). Father Kino founded Mission stations in Baja California in 1683⁵⁶ and shortly after there were growing many Castilian fruits such as the fig. Miguel Venegas referred to Fathers Ascencion and Ugarte who had planted at San Barnabe figs, olives, grapes and other fruits growing in New Spain.⁵⁷ According to Forbes, Father Luyando planted fruit trees at Mission San Ignacio in 1728; figs and dates were later dried and exported.⁵⁸ As reported by Eisen, the fig orchards of Baja California are found principally in the central part of the peninsula from Purisimia and Comondu to La Paz.⁵⁹ In Sonora on the Mexican mainland, Eisen found only the "Mission black fig" the fruit being consumed fresh.

In conclusion, I wish to add to the above records some personal observations made

⁴⁷ J. C. Carpenter, "The Skinless Preserved Fig Industry," *Houston, Texas, Chronicle*, May 25, 1924.

⁴⁸ J. T. Woodbury, "Farming in Utah's Dixie," Salt Lake, Utah, *Farmer*, February 10, 1923.

⁴⁹ Ruby Roys, "Pioneer Grower Knows All About Figs Adapted to Climate of Northwest," *Portland, Oregon Journal*, October 11, 1942.

⁵⁰ Joseph Gaston, *The Centennial History of Oregon* (3 vols., Chicago, 1912).

⁵¹ T. A. Sharpe, "Experimental Farm for British Columbia Report for 1895," *Canada Experimental Farms, Report*, 1895:371-412.

⁵² H. C. Wyllie, Address, August 12, 1850, Royal Hawaiian Agricultural Society, *Transactions*, 1:36-49 (1850).

⁵³ E. J. Wickson, "California Mission Fruits," *Overland Monthly*, 11:501-505 (1888).

⁵⁴ Gustav Eisen, *The Fig*, U. S. Department of Agriculture, Division of Pomology, *Bulletin*, no. 9, 1901.

⁵⁵ Irn J. Condit, *The Fig* (Waltham, Mass., 1947).

⁵⁶ Kino, *Kino's Historical Memoir of Pimeria Alta*, translated by H. E. Bolton (2 vols., Cleveland, 1919).

⁵⁷ Miguel Venegas, *A Natural and Civil History of California* (2 vols., London, 1759) 1:43.

⁵⁸ Forbes, *Sketches, Historical and Topographical of the Floridas*.

⁵⁹ Eisen, *The Fig*.

while visiting places of historical interest. Two such visits, one in 1940 and the second in 1948, were made in the company of Mr. and Mrs. Harry Fulton, Washington, D. C. Though retired as Plant Pathologist, United States Department of Agriculture, Fulton's zeal has been unflagging in citing references to literature, supplying historical records, and collecting cuttings of odd fig trees for propagation. At Wakefield, we found fig bushes growing near the back door of the restored Washington birthplace. At Stratford we saw several fig trees but probably not those from which the "young lady of Virginia" feasted. In the gardens of the restored Governor's palace at Williamsburg, we found in 1940 a "figgery" of young trees had been established. In 1948, these trees were thriving and several were espaliered against the brick wall. Here also we were reminded of the statement as recorded by Porcher, that pipe stems are commonly made from fig branches.⁶⁰ At Jamestown, the guide showed us two fig trees by house and barn, one producing green fruit, the other brown, possibly descendants of the trees from which Mistress Pierce picked bushels of "excellent figges." Two small commercial plantings of the Brown Turkey fig were located at Cheriton, Virginia. Another and larger planting is that of Stoughton Sterling at Crisfield, Maryland, where fresh figs of two or three varieties are produced and shipped to city markets. Literally hundreds of fig bushes or single trees are growing in the coastal belt of Virginia and Maryland, in spite of winter temperatures which sometimes register almost or even below zero.

During these two trips through Virginia and Maryland, Fulton and I identified 12 varieties of figs as listed here. The nomenclature followed is that found in Condit's monograph of 1955.⁶¹

Ischia—A large bush growing at Gross' Coate, near Easton, Maryland.

Brunswick (*Magnolia*)—Common; fine trees along south wall of Naval observatory in Washington, D. C.

Brown Turkey—Common; trees often bear two crops; well regarded for canning and preserving.

Early Violet—Occasional trees only; figs small.

Verte (*Ischia Green*)—Grown commercially at Crisfield, Maryland.

San Piero (*California Brown Turkey*)—Trees at Saxis, Virginia, and Crisfield.

Malta (*Celeste*)—Trees very common, apparently more hardy than most others; locally known as the Sugar fig; main planting of this variety at Williamsburg.

Franciscana (*Mission*)—One tree on the original Arlington place of the Custis family near Cape Charles, Virginia; also near Norfolk and at Hampton Institute.

Dottato (*Kadota*)—One tree at Diamond Springs, Virginia.

Blanche (*Marseilles White*)—One tree on Custis place near Cape Charles, also at Crisfield.

Yellow Neckes—An unidentified variety from Jamestown.

Troiano (*Lemon*)—Probably this variety growing at Crisfield and on nearby Smith Island.

Caprifig—A seedling tree along highway near Accomac, Maryland, a reminder of the fact that seedling trees grown from fertile seeds of imported Smyrna figs, were at one time not uncommon.

Since 1940, 80 distinct lots of fig cuttings collected by me or forwarded by Mr. Fulton, mostly from Virginia and Maryland, have been received and tested at the University of California Citrus Experiment Station, Riverside. The Brown Turkey,⁶² long heralded as the most popular variety of England, has been identified from material collected at Mt. Vernon, Stratford Hall, and Jamestown.

Cuttings from five different gardens in Washington, D. C., have been identified as Monstrueuse, showing that this French variety is being successfully grown in the eastern United States.

It is evident from the above account that the New World is deeply indebted to the early colonists for the introductions of choice varieties of fruits and nuts, introductions which are continuing, especially by Italian immigrants, who even in Rhode Island are planting fig trees and enjoying the fresh fruit as illustrated by Long in 1948.⁶³

⁶⁰ Francis P. Porcher, *Resources of the Southern Fields and Forests* (Charleston, 1869).

⁶¹ Ira J. Condit, "Fig Varieties: A Monograph," *Hilgardia*, 23:323-538 (1955).

⁶² *Ibid.*, 428.

⁶³ George W. Long, "Rhode Island, Modern City-state," *National Geographic Magazine*, 94: 137-170 (1948).

English Agricultural Methods and the American Institute, 1871-1872

THOMAS L. BUSHELL

One of the principal factors in Anglo-American relations has been a nearly constant unofficial interchange of ideas in matters ranging from religion and politics to economic theory and agricultural methods. In the post Civil War era American life was rapidly changing under the impact of an industrial transformation which had been intensified in some of its aspects to answer the demands made upon the national economy during the years of war. English ideas and English capital were handsomely contributing to this not un-painful industrial development, and English agriculturists also gave time and practical advice to men representing the American farming interest in a period when its most pressing difficulties were rather neglected at home.

On November 28, 1871, the Farmers' Club of the American Institute of the City of New York convened for its weekly meeting. The Club was composed of a remarkably heterogeneous group of men, for it included eastern gentlemen farmers, men in possession of large estates, in addition to more modest members, ordinary farm folk making a bare living on smaller farms in the eastern states. Among prominent public figures with whom farming was an avocation, Horace Greeley, publicist and editor of the *New York Tribune*, was in frequent attendance at the meetings of the Club. There were, too, correspondents sending in problems and inquiries who lived in the prairie country reaching out towards the frontier lands in the Far West, an area from whence came great yearly shipments of wheat to the English markets. The speaker on this day in late November was George H. Cook, Professor of Agriculture in Rutgers College, New Jersey; he was to deliver the first in a series of talks that winter on new developments in English agriculture. Cook, much in the manner of Arthur Young nearly a century earlier,

had gone abroad to observe agricultural methods and had spent most of his time in England where, he reported, "the agriculturists comprise in their number many of the best informed, the most sagacious, . . . accurate and conscientious workers on those islands."¹

It appeared to Cook that the secret of English agricultural success was "heavy stocking and high feeding."² He had visited the farm of Robert Leeds where, of 1,160 acres, 1,000 were under active tillage. It was Leeds' general practice to divide this area into four plots over which he rotated nitrogen-restoring root crops or clover and timothy, then wheat, barley or oats. Any area larger than a quarter part was most generally put either to beet-roots or turnips. In the summer of 1871, Leeds had planted 300 acres to root crops, and Cook estimated the yield to have been 9,000 tons or 30 tons to the acre, all of which were consumed on the premises by 2,000 Southdown sheep and 300 Durham beef cattle. Of these regularly maintained numbers, 500 sheep and 200 to 250 beeves went off to market annually. The process of box feeding these latter animals greatly interested Cook and he expressed the wish that American farmers might be induced to take up the practice. Leeds' method was to enclose the animals individually in small, well strawed "boxes," 10' by 10'. Heavy daily feeding on oil meal, cut roots and hay in this restricted space facilitated alike the fattening process and the collection of the rich manure compost left behind by the animal.

Cook came away from England well abreast of contemporary soil fertilizing developments. In addition to knowledge gained from close observation of what was done on the Leeds farm, he learned that

¹ American Institute, *Transactions*, 32:356.

² *Ibid.*, 359.

elsewhere for best results with an ensuing wheat crop the farmers first planted turnips, then folded flocks of sheep on the same field during the autumn and winter months. The turnips remained to be eaten out of the ground by the sheep, which were confined in great numbers to areas of one-half acre. According to Cook, this method had the advantage of simultaneous manuring and weed control, for when the sheep were ready to be moved to another half acre plot the one they had just occupied had the appearance of a road bed, so compacted was the soil. On light soils, of course, such consolidation was most beneficial. This process continued on into the month of March, when preparations were begun for the new wheat crop. Comparing England, with an area slightly over 50,000 square miles on which were supported nearly thirty million sheep, to New York state, with approximately 49,000 square miles and supporting a number over two million, Cook averred, "she has fifteen sheep feeding and fertilizing her surface where we have one."⁵ It was not the pride of the best English farmers to speak in terms of bushels of wheat yielded up per acre. Rather, they spoke of so many tons of meat, and Cook indicated that the average production was 138 pounds a year to the acre.

Cook had the happy experience while in England of making the acquaintance of Sir John Bennet Lawes. As an undergraduate at Oxford, Lawes had shown a special aptitude for chemical studies, a pursuit for which there were extremely limited facilities in the University of those years. In 1834, however, he entered into possession of the family estate at Rothamsted and at once began chemical experiments with drug-producing plants. Some four years later in a conversation with Lord Dacre, who farmed near him, a comment was made which greatly interested Lawes. Dacre had rather diffidently observed that on certain soil bones appeared to be invaluable for the turnip crop, while on other soil they were quite useless. Thoughts on this fact and others of a like nature were to preoccupy the major por-

tion of Sir John's adult life. In 1843, he was joined at Rothamsted by Dr. (later Sir) Joseph Henry Gilbert, a young organic chemist who had studied with Justus Liebig on the Continent at Giessen. Rothamsted thus became an agricultural experiment station, and upon the work carried out there was partially built the modern fabric of English agriculture.⁶

In 1861, Lawes and Gilbert published the results of their first long-term experiment in a paper entitled, "The Sources of the Nitrogen of Vegetation."⁷ Their original experiment, together with those carried forward until the turn of the twentieth century, led to a firm knowledge of the application of appropriate manures to lands which are variously constituted, and to crops which differ in their special requirements. At Rothamsted, Cook spent much time inspecting and gathering data on the fields of root crops upon which bone and phosphate had been used as fertilizers. He noted that drained fen lands, often black to a depth of several feet, were not fertilized with farmyard manures. Lawes had indicated that the valuable ammonia content of these manures was wasted on soil of this nature, already rich in elements of ammonia, and that it gained most by the application of various forms of lime.

Later, when the Farmers' Club met at the American Institute on February 20, 1872, the problem of land drainage was discussed. Henry Taylor, an agricultural engineer of wide experience in this work over several counties of England, was the guest speaker.⁸

Drainage, usually in the rudimentary form of ridging the surface of wet soils, had been practiced in England since medieval times. Then, in 1630, the first large-scale drainage work in the Kingdom was undertaken in the Fen District by the Russell family.⁹ The project sprang from

⁵ *Ibid.*, 360.

⁶ Lord Ernle, *English Farming Past and Present* (4th ed., London, 1927), 366.

⁷ See Royal Society, *Philosophical Transactions*, 151:431-578.

⁸ American Institute, *Transactions*, 32:465.

⁹ Ernle, *English Farming Past and Present*, 117.

an idea the family had kept in mind since Elizabethan days when old Sir William Russell, while serving as a young lieutenant-general under Leicester in the Low Countries, observed how much of the land there had been reclaimed from the sea. The work was guided by Cornelius Vermuyden, a Dutch engineer who had learned his craft at home and on various projects in England. But developments in the deep drainage of land made little progress before the nineteenth century.

For many years, farmers on the heavy clay lands had been seeking for some method of drainage that would remedy the over-wetness of their soil, thus enabling them to share the advantages that scientific knowledge had placed within reach of those working the lighter, more porous, soils. Undrained land under the plow was cultivated with greater difficulty than lighter soils and it could support only a restricted variety of crops and grasses. It took longer for these heavy soils to dry off in spring-time. This, of course, meant late seeding; and the severity of autumn and spring frosts was increased on lands already burdened by a too heavy moisture content. A process was needed that would so change the texture of the soil as to render it capable of being worked earlier in the season, more accessible to air and manure and, therefore, able to nourish a wider variety of plant life.

The problem of deep drainage was at length solved along lines laid down by local practice in the counties of Essex and Suffolk. In those counties rather shallow trenches were cut usually to a depth of two feet and spaced at frequent intervals over the surface of a field. The trenches were then partially filled with boughs of thorn or alder, and the soil replaced. In time, this matter would decay leaving a natural arch to act as a waterway beneath the topsoil. Often when peat or stones were easily available, these were placed in the trench bottoms and so formed a system of drains from which water seeped off the land.*

Following the principles evolved in Essex and Suffolk, James Smith of Deanston,

Perthshire, in 1823 converted a marsh into a garden. His drains were trenches cut two and one-half feet deep, partially filled with stones and covered over. They were spaced over the field in parallel lines from 16 to 21 feet apart. Smith's work became widely known; he published in 1831 the results of his reclamation experience in a book that appeared under the title, *Remarks on Thorough Draining and Deep Ploughing*. But before drainage methods were properly understood in connection with the nature of the specific soil to which they were applied, many expensive mistakes were made. Too often the drains were laid so far into the subsoil that they served no function whatever for purposes of improved cultivation. In these cases correction meant doing the work over again, this time taking care that the drains were placed nearer the surface and more likely to carry off excess moisture first from the topsoil, then away from the subsoil if the need existed.

By 1845, English agricultural engineers were using a cylindrical clay pipe in constructing drains and with this improvement we have the mechanical essentials of drainage as understood by Henry Taylor when he spoke at the American Institute in February, 1872. He first stressed the need for a thorough understanding of the composition of the soil about to be drained, since imperfect work destroyed the slow natural seepage that had been going on for centuries. The premier consideration, therefore, had to be an exact knowledge of the nature of the subsoil and whether the farmer intended to use the land for permanent pasture or for cultivation. If for the latter where there was a strong clay subsoil, the pipes were laid at a depth of four feet with not more than 21 feet as an interval between the drains. Under land of this type intended for permanent pasture, drains usually required a depth of from two and one-half to three feet. On light porous soils, Taylor recommended that the depth of the drains be deeper with more generous intervals of space separating

* *Ibid.*, 363.

them. Perhaps with something of the specialist's rather exaggerated opinion of the importance of his work, Taylor stated that his experience led him to recommend drainage in the most apparently dry subsoils even should no water ever lodge on such land. Moreover, "I have known sandy land in England," he said, "always . . . rough with couch grass—which is the arable farmer's greatest enemy—until one or two very deep drains have been inserted. . . . After drainage the couch grass entirely disappeared in two years."⁹

Of high importance if drains were to be effective was the size of the drain tile. The pipe had to be of such dimensions that never more than half of it should fill with water, leaving the other half for the admission of air so that the water could move freely from the soil. Obviously, the amount of excess moisture in the land governed this factor. That field drainage had further subtleties is attested by the fact that Taylor recommended leaving the freshly cut trenches open for several weeks, while allowing the uprooted subsoil to become thoroughly dry before it was replaced in the drain. This done, the drainage system acted at once; otherwise, two years might pass before results were obtained.

The most propitious time for drainage operations to begin was immediately after harvest when a sufficient labor force was at hand; the aggregate cost Taylor estimated to be from £5 to £8 per acre. His speech stirred much interest and well it might, for the drainage methods about which he spoke had put to profitable use thousands of English acres that had been tortured by centuries of frost, wind and water. Suitably modified to fit the different circumstances of climate and subsoil, these practices were before long employed on our side of the Atlantic.¹⁰

Most likely, the one topic discussed before the Farmers' Club in the winter of 1871-1872 that *par excellence* had stimulated the American imagination was the Fowler steam plow. Yankee ingenuity, in that epoch as well as others, prided itself on its accomplishment in the field of mechanical problems, so any new machine

from abroad attracted close attention. Fowler's plow had been mentioned at one of the Club's meetings as early as June, 1869, and this was quite enough to conjure in the minds of those present various pictures of steam-powered corn huskers, mowing machines, timber sawing machines, etc.¹¹ Horace Greeley, keeping in mind the successful experience of his farmer nephew on the deep, rich topsoil of Salem County, New Jersey, on this, as on several previous occasions, recommended deep plowing as a preventive measure against almost any sort of crop failure. Doubtless, his first thoughts on Fowler's plow took the form of personal assurance that this oft-repeated advice would become general practice on every variety of soil. But it had taken a supple imagination to perfect this revolutionary new implement, so it is not unusual that it occasioned much speculation among contemporary agriculturists.

As a young man from Melksham, Wiltshire, John Fowler had taken employment in 1847 at the engineering works of Gilkes, Wilson and Company at Middlesbrough, where he gained invaluable technical experience. Some two years later when visiting in Ireland, his sensitive nature was oppressed by the poverty of much of the land and of the people who had remained upon it since the terrible years of famine. His quick intelligence perceived that something might be done to ameliorate Irish poverty by reclaiming, through drainage, the waste lands of the country. Quite naturally, he thought in terms of some mechanical device by which the expense of manual labor might be minimized.¹² Returning to England, he took up work on this problem in 1850 with the collaboration of one Albert Fry. Their work resulted in the successful production of a horse-powered draining plow.

Fowler, putting this new plow to work, undertook a contract for the drainage of

⁹ American Institute, *Transactions*, 32:466.

¹⁰ See F. H. King, *Irrigation and Drainage* (New York, 1899), 428-459.

¹¹ American Institute, *Transactions*, 30:388.

¹² Institution of Mechanical Engineers, *Proceedings*, 18:14.

Hainault Forest, Essex. While this and additional drainage contracts in the south of England were being carried out, he was experimenting with the application of steam power, first to the draining plow, then to a plow for the cultivation of the soil. In both cases he was successful, and thus began the important process of applying engine power to field machinery.¹³ In 1861, Fowler established a manufactory in Leeds for the production of his machines. A competent man of business and an inventor of some genius, he died in 1864 at 38 years of age having made a contribution of wide significance to agricultural procedures.

Casualties among draft animals in the Civil War had perceptibly reduced their numbers on farms in the United States. Then, too, in an epoch when yet new areas were being settled in the West, and when many farm laborers were leaving the land to seek employment in urban industries, the Fowler plow was welcomed by the American farmer. He noted with enthusiasm when in 1869 one was imported and put into operation on farms near Atsion, New Jersey.¹⁴ This machine by means of cable and pulley equipment drew a row of six plows across a field at the rate of five miles an hour, easily turning over 20 acres of topsoil in a day's work. The plows could be taken off and a harrow attached to the cable. This latter implement penetrated the soil to a depth of more than one foot and with its relatively fast movement could, in a single operation, leave a field of hard clay loam friable and ready for planting. In the previous November when he spoke before the Farmers' Club, Professor Cook had mentioned the rapidity with which Fowler's plow worked. "I saw a field of wheat," he said, "ready for the reaper Monday morning. On Wednesday night the wheat was off, the stubble was torn fine and deep, and the root crop was in."¹⁵

There was, of course, the disadvantage of high initial expense in connection with the purchase of one of Fowler's machines. On March 5, 1872, General J. H. Van Allen spoke of this when he addressed the Farm-

ers' Club.¹⁶ There were, by the early 1870's, over 2,000 of Fowler's plows in use, mainly in Great Britain and on the Continent, with several working on the Egyptian cotton lands.¹⁷ The purchase price in Leeds was upwards of £2,000; imported into the United States, the price of the machine ran well over \$12,000.¹⁸ This meant that only a restricted number of farmers on either side of the Atlantic could afford so large an investment. Van Allen spoke, however, of the English companies which assumed the cost of the plows and then took plowing contracts with individual farmers over a wide local area.

Commenting on the cost of Fowler's

¹³ *Ibid.* This work occupied Fowler from 1852 to 1858. During the latter year he won an award of £500 from the Royal Agricultural Society for producing the first steam machine that could successfully do sustained field work. Other engineers in Great Britain and the United States were contemporaneously working on the problem. In 1857, James Boydell demonstrated a steam plow near Louth, Ireland, that had some initial success, but was later abandoned as too mechanically impracticable. The boundless spaces of the American prairie country required a machine of more flexible power than Fowler's, so early experiment here turned to the development of a self-propelled engine that could draw a plow in tandem. Well before 1860, Obed Hussey of Baltimore and Joseph W. Fawkes of Lancaster, Pennsylvania, had demonstrated steam plows. Both implements, however, were of limited utilitarian value. Fawkes' machine was over 20 feet in length and weighed almost 10 tons. In any but the most baked prairie soil it tended to submerge itself. But the importance of Fawkes' and Hussey's work was to show that the self-propelling principle was feasible. By the later 1870's the problem had been satisfactorily worked out with the production of light, maneuverable steam traction engines. These were manufactured in quantity by the J. I. Case Company of Racine, Wisconsin, C. and G. Cooper and Company of Mount Vernon, Ohio, etc. The full details of this development are given in Reynold M. Wik, *Steam Power on the American Farm* (Philadelphia, 1953), 15-81.

¹⁴ American Institute, *Transactions*, 30:387-388.

¹⁵ American Institute, *Transactions*, 32:357.

¹⁶ *Ibid.*, 484.

¹⁷ *Ibid.*, 357. Professor Cook, in the company of John Fowler's son, had been conducted over a number of farms to observe the steam plow in operation. He reported, "Between two thousand and three thousand of them are in use."¹⁸

¹⁸ American Institute, *Transactions*, 30:388.

plow to his agriculturist colleagues at the American Institute, James A. Whitney deemed it "the opprobrium of the Yankee brain that it has not been able to apply steam to tillage except at a cost which puts it quite beyond the average American farmer."¹⁹ But, when viewed in perspective, the application of engine power to farm implements in the United States was only momentarily—and then not on a mass basis—to take the form of steam.²⁰ By 1872, the petroleum industry had been more than a decade in existence and it was simply a matter of time until petrol-powered tractors, devised, of course, by the Yankee brain, would be drawing plows and other cultivating machinery over American fields. Meanwhile, Fowler and his fellow engineers had demonstrated the efficacy of non-animal-powered heavy machinery. Their work was to widen the scope of agricultural operations, helping to make it possible to feed and clothe the great urban populations of the twentieth century.

From its founding in 1829 and throughout the remaining decades of the nineteenth century, the American Institute served as an important center for the dissemination of new agricultural ideas here and abroad,

a long activity which has been partially examined in this article. Nor is this all the Institute may claim to its credit, for as one thumbs through the brittle pages of the *Transactions* of a century ago, he comes face to face with the everyday, and often vexatious, problems on the farm that confronted our forebears in this new land. If Farmer Stoddard had difficulty growing an Osage hedge on a small farm in Michigan in the 1870's, Colonel Dixon was concerned with questions of beef production on broad acres in Ohio; and neither hesitated to inquire for advice at the American Institute. In times before great universities and public and private agencies concerned themselves on a large scale with agricultural affairs, it proved itself a valuable organization through the assistance it often gave to the American farmer.

¹⁹ *Ibid.*

²⁰ Steam power on farms in the United States found its most wide-spread and ready use in application to the threshing machine, as well as to the plow. It reached its peak of utility in 1910 when 3,600,000 steam horsepower were available to agriculture; simultaneously, about 22 million horsepower were furnished by draft animals. For a discussion of this see Wik, *Steam Power on the American Farm*, 82ff.

KEEPING A COW IN MANHATTAN

"A businessman of New York . . . being troubled to get good milk for young children in his family . . . went into the dairy business on his own account. He has no pasture grounds, the only convenience being a roomy stall in a carriage barn, with opportunity for the cow to sun herself and take limited exercise in a small area, say 15 x 20 feet, at the side of the barn, and this was seldom used.

"A neighbor is paid \$1 a week to milk and feed and brush her night and morning, and to take care of the stable, and he is allowed any excess of milk she gives over 12 quarts a day. One neighboring family gladly takes six quarts a day at 7c a quart, and would willingly pay much more if it were asked, and other families would be happy to get some of it at 10c a quart, but six quarts are kept for home use, and it is valued far above 7c a quart and worth more than that amount in the saving of butter in cooking, making puddings, etc."—Bourinot, Mrs. G., *Keeping One Cow*, New York, Orange Judd Company, 1880.

The Development of Short Courses at the Land Grant Institutions

VERNON C. LARSON

Each year thousands of young men converge on the land-grant institutions throughout the nation to enroll in short courses. These courses vary in length from a few weeks to two years. Most of the students are on the campus during the winter months when the many phases of agriculture are least active. Short course programs are an integral part of the resident instruction on most campuses. They are essential in reaching a large segment of agriculture that would otherwise be neglected by the activities of the land-grant institution.

In determining the origin of short courses, or non-degree training, at the land-grant institutions, it is evident that there were two sources of development.¹ In some states, schools of agriculture were formed within the colleges, while other institutions adopted short courses of varying lengths and purposes. Many of the schools of agriculture, as well as short courses, led to the establishment of colleges of agriculture.² The Storrs Agricultural School, established in 1881, was given the land-grant fund and became Connecticut's agricultural college in 1893.³ An aim of these schools was to provide training that would enable the students to increase their proficiency in the business of agriculture.

One of the few schools of agriculture which started prior to the turn of the century and has continued to function to the present day is the School of Agriculture at the University of Minnesota.⁴ This school, started in 1888, was founded as a result of dissatisfaction on the part of agricultural leaders of that state in that the university was not providing adequate agricultural education. Although the land-grant funds had been accepted by the university, and some effort had been made to fulfill the necessary obligations of that act, there was considerable criticism from newspapers and agricultural organizations. The courses

offered in agriculture had not appealed to the people and there developed considerable sentiment in favor of a separate college of agriculture apart from the university. Finally, after much study by special committees, a practical course in agriculture was established a few miles from the university on the site of the agricultural experiment station.

The short course movement had some of its early development in Wisconsin.⁵ Even though the College of Agriculture within the University was not established until 1893, short courses began in 1885 with an enrollment of 19 students.⁶ Professor W. A. Henry, who was instrumental in starting this short course, urged other institutions to consider similar types of training programs. He emphasized the practical aspects of the course and stressed that it should be organized so as to attract agricultural students and meet the actual needs of the farm youth. As yet, there was still a relatively small demand for advanced agricultural instruction as offered through the degree programs.

In Michigan, the germinal idea of short courses began as early as 1867 when the

¹ A. C. Monahan and C. H. Dye, *Institutions in the United States Giving Instruction in Agriculture, 1915-16*, U. S. Bureau of Education, Bulletin 26, 1917, 15.

² Alfred Charles True, *A History of Agricultural Education in the United States, 1785-1925*, U. S. Department of Agriculture, Miscellaneous Publication 36, 1929, 75, 323-329.

³ Rufus W. Stimson and Frank W. Lathrop, *History of Agricultural Education of Less than College Grade in the United States*, U. S. Office of Education, Vocational Division Bulletin 217, 1942, 418.

⁴ Andrew Boss, *The Early History and Background of the School of Agriculture at University Farm, St. Paul* (Minneapolis, 1941), 13-90.

⁵ True, *A History of Agricultural Education in the United States, 1785-1925*, 75, 126, 212.

⁶ Stimson and Lathrop, *History of Agricultural Education of Less than College Grade in the United States*, 472.

State Agricultural Society recommended that the college establish a winter course of lectures on agricultural and kindred subjects. Such a course was first given in 1894 with 17 students enrolled.⁷

The developmental process of non-degree training in agriculture was similar in many states. It spread throughout the nation because agricultural leaders demanded timely and practical training from their land-grant institutions. By 1917, schools of agriculture varying from one to four years in length were found in 41 colleges. Thirty-eight colleges offered short courses ranging from a few weeks to several months.⁸

In a survey of the land-grant institutions, published in 1930,⁹ it was indicated that 13 institutions offered eight-week short courses and nine institutions offered twelve-week short courses. Ten institutions offered a one-year program, and a two-year program was available at 18 institutions. Most of the short course programs were administered by a short course director or by the dean or director of resident instruction.

One of the more important early reports concerning the place of short courses in the land-grant institutions was presented in 1910 at the annual meeting of the Association of American Agricultural Colleges and Experiment Stations.¹⁰ Much discussion had preceded this presentation as to the merits and costs of non-degree training and some advocated the combining of as many courses as possible with the degree courses. The report stated that it is indefensible, except as a temporary measure, to have both short course and four-year course students in the same class. Their purposes for being in class are different and it is unfair to both groups. The primary objective of the short course must be to give students the best possible training in practical agriculture and send them back to the farm rather than placing primary importance upon preparing them for college degrees.

The report also advocated that each student leaving school in the spring should select some problem on his home farm to

work with during the next few months. This problem was to be selected prior to leaving school and discussed in detail with his instructors. The following fall, a report of the solution or findings concerning the problem were to be presented.

In 1924, a study was undertaken by the instructional committee of the Association of Land-Grant Colleges¹¹ to "study the aims, character, duration and present status, proposed development, and changes of the short courses offered at the land-grant institutions."¹² This was probably the most comprehensive effort to evaluate the whole area of short courses up to that time. Through questionnaires and a review of catalogs, it was found that 46 institutions offered short courses in agriculture, 20 in home economics, and 24 in mechanic arts varying in length from one day to four years. The report indicated that 25 of these short courses were more than one year in length.

Most of the colleges at that time felt that short course work had a definite place in the total educational efforts of their institutions. In some states where the program had been primarily of secondary school nature, it was stated that vocational agriculture in the high school was decreasing the demand for colleges to continue with such activity. Other colleges indicated that they merely changed the emphasis to a post-high school course, yet keeping it on a practical level.

Nomenclature was a problem then as it is today since the term "short course" in-

⁷ W. J. Beal, *History of the Michigan Agricultural College and Biographical Sketches of Trustees and Professors* (East Lansing, 1915), 60, 67, 100, 146.

⁸ Chester D. Jarvis, *American Agricultural Colleges*, U. S. Bureau of Education, Bulletin 29, 1918, 67-69.

⁹ Arthur J. Klein, *Survey of Land-Grant Colleges and Universities*, U. S. Department of the Interior, Office of Education, Bulletin 9, vol. 1, 1930, 729.

¹⁰ Association of American Agricultural Colleges and Experiment Stations, *Proceedings*, 24: 137-143 (1910).

¹¹ Association of Land-Grant Colleges, *Proceedings*, 38: 75-107 (1924).

¹² *Ibid.*, 75.

cluded conferences of one and two days as well as courses of two or three years. Two of the recommendations of this committee were that:

. . . (1) a short course is a course of systematic instruction in a given subject or a group of subjects of shorter duration than a four-year college course and not leading to a degree. Obviously a course of systematic instruction can not be given in a few unrelated lectures within a period of a few days. (2) extension meetings, farmers' weeks, and similar meetings for a few days, having a miscellaneous program and no really systematic instruction, should not be called short courses but conferences or institutes.¹²

The next reference made to short courses was in the proceedings of the 1928 annual meeting.¹³ The Short Course Director at Massachusetts presented a paper on "The Special Field of Non-Degree Course in our Agricultural Colleges." He indicated that the reason for initiating short courses at his institution was because the farm people wanted more service from their agricultural college and were in a position to demand it. The Massachusetts legislature requested the trustees of the college to provide courses of less than college grade.

The major reasons why the short courses at Massachusetts have been so successful were summarized as follows:

(1) Low relative cost to the student, limited time involved, and easy entrance. (2) Continued trend of city-raised boys to agriculture. (3) Difficulties farm-reared boys from small high schools find in meeting four-year college entrance requirements. (4) Placement service to determine a student's capacity. (5) Good openings provided in a wide range of agricultural businesses. (6) Provides practically an equivalent of the college courses in agricultural subjects for many young people whose formal training opportunities would otherwise be at an end. (7) Appeals to a more mature group of students. (8) Broad scientific and cultural background apparently not absolutely necessary for success in these vocations.¹⁴

Freeman of Indiana presented a report in 1948¹⁵ stressing the fact that the report of the President's Commission on Higher Education made no direct mention of short courses although it did emphasize the importance of providing educational opportunity at all levels. The writer actively defends the short course program

and advocates that such activity be increased throughout the United States. He indicates how proponents of the community college movement could very easily absorb short course work but would be unable to do the job as effectively, especially in the field of agriculture. The land-grant institution is a natural location for short courses because of the research activity and the technical and specialized faculties already present.

The findings of a survey of former short course students who attended Michigan State College were presented by Tenny.¹⁶ The study attempted to measure the degree of farm ownership and amount of participation in community organization. In the tabulations the alumni were divided into ten-year groupings according to age. An effort was made to measure the findings with a control group and in all of the age groupings the former short course student participated in more leadership activities as well as became established in farming more rapidly. Over 85 per cent of the former students were directly engaged in agriculture.

In 1949 Vifquain¹⁷ reported concerning a recent questionnaire survey to the land-grant institutions. He stated that 28 of the 34 institutions returning questionnaires indicated increasing demands for short courses.

A second report in 1949¹⁸ told how the W. K. Kellogg Foundation of Battle Creek, Michigan sponsored a short-course scholarship plan at Michigan State College. In 1938 the Kellogg Foundation made a study of the agricultural situation in the State of Michigan. The Foundation became particularly interested in the migration of the best farm youth to the city and, in the course of investigating the problem, worked in close cooperation with Michigan State

¹² *Ibid.*, 81.

¹³ Association of Land-Grant Colleges and Universities, *Proceedings*, 42: 141-145 (1928).

¹⁴ *Ibid.*, 145.

¹⁵ *Ibid.*, 62:168-169.

¹⁶ *Ibid.*, 165-166.

¹⁷ *Ibid.*, 63:152.

¹⁸ *Ibid.*, 152-154.

College. The conclusion was reached that if some encouragement could be given to highly selected farm youth, a goodly number of them might remain on the farm and continue the development of the agricultural industry on a high level.

The Foundation started its program by offering a number of scholarships for eight-week short courses in agriculture and home economics at Michigan State College. The courses were specially designed to offer a concentrated, yet flexible program for both boys and girls. Leadership training, community recreation, and family relations courses were given special emphasis along with the practical subjects of agriculture and home making. The Foundation had intended carrying on this experiment for a period of three years but due to the war and other causes, continued the program through a ten-year period during which time 1,675 rural youth attended a short course. The college officials and the Foundation were so impressed with the success of their venture that they were anxious to have it continue even though the Foundation had a policy to withdraw from an experiment of this kind after it had been proven. The Michigan Bankers' Association soon realized the value of such a program and adopted the plan. A total of 203 banks in Michigan were participating in providing scholarships at the end of the first year.

A further presentation regarding the bankers' interest in short courses was made a year later.²⁰ A summary of the report indicated that the American Bankers' Association had adopted the scholarship plan as operating in Michigan and had publicized the program widely. It continued to mention that the Agricultural Commission of the American Bankers' Association was desirous to be of assistance in working out details for scholarship plans throughout the nation.

The Short Course committee, a subsection of the Resident Teaching section of the Land-Grant Association, has met for several years with the purpose of strengthening this short course activity. The schools with the larger and more active programs

have assumed leadership in this group and have continued to advocate the adoption of this type of educational program at other institutions.

In 1947 the Association of Land-Grant Colleges and Universities approved the following resolutions:

RESOLUTION I:

Whereas, Land-Grant Colleges have the moral and legal obligation to serve in every reasonable way the educational needs of citizens engaged in agriculture and its related arts and sciences; and

Whereas, a need exists in every state for agricultural training in non-degree courses; and

Whereas, Land-Grant Colleges have the type of instructional staff and are equipped with the teaching facilities and demonstrational materials requisite to effectiveness in such training; and

Whereas, it has been clearly demonstrated in several states that such training at Land-Grant Colleges can contribute significantly to the economic, social, and professional improvement of citizens; be it therefore

RESOLVED, That this Resident Teaching Section of the Land-Grant College Association shall aggressively encourage the establishment and development of agricultural instruction in non-degree courses in each of the Land-Grant Colleges.

RESOLUTION II:

Whereas, the problems of organization and administration of short course instruction require special attention; and

Whereas, the current period of high enrollment in Land-Grant Colleges is also a period of pressing need for non-degree agricultural instruction; and

Whereas, the experience of Land-Grant Colleges with the large number of short courses currently offered demonstrates the need for an administrative unit responsible for short course work, be it therefore

²⁰ *Ibid.*, 64:170.

RESOLVED, That this Resident Teaching Section of the Land-Grant College Association recommend the early establishment at each member institution of an administrative unit responsible for the development of short-course work.

RESOLUTION III:

Whereas, it has been demonstrated that housing is more difficult to obtain for short course students than for students contracting housing for longer periods; and

Whereas, economic and comfortable housing together with wholesome student contacts and carefully planned living experiences contribute significantly to the total values of short course training, be it therefore

RESOLVED, That this Resident Teaching Section of the Land-Grant College Association recommend the early development at each member institution of adequate housing and food service units with opportunity for experience in group living for short course students.²¹

In June of 1950, a national workshop on short courses was held at Michigan State College with 37 institutions represented. Since that time, several regional workshops have been conducted. In April

of 1952, 13 southern institutions held a short-course planning conference at Louisiana State University. A similar conference was held at Oregon State College in April of 1953 with 12 states represented. The eastern states had their workshop during July of 1954 at the University of Connecticut. To quote from the report of the national workshop, the objective of these various workshops were as follows:

1. To learn from the experience of others who are working with short course programs.
2. To improve short course programs now in existence at various Land-Grant Colleges.
3. To stimulate the development of programs at those Land-Grant institutions where none now exists.
4. To develop, in so far as it is possible, a "National Pattern" for short course training, at least to arrive at some agreement on the basis of program planning, short course curriculum, and if possible, uniform nomenclature to be used in short courses.²²

²¹ *Ibid.*, 61:91-92.

²² Michigan State College, "Short Course Workshop" (Unpublished, East Lansing, 1950), 10.

OSTRICH FARMING IN NEVADA

"An experiment in ostrich farming was made in 1879 by Theodore Glancy, whose land was southwest of the Bismarck range, near the old route from Carson to Bodie. Failing to hatch the eggs in sand by solar heat, he obtained a pair of birds from which, in 1881, he raised ten others. The use intended to be made of the birds, was in transporting provisions and other parcels. Their plumage alone would make them valuable."—H. H. Bancroft, *History of Nevada, Colorado, and Wyoming*, 1890, p. 250.

The Pendleton Farmer's Society

CLYDE E. WOODALL

AND

GEORGE H. AULL

In the early years of the nineteenth century, a group of farmers from the Pendleton District of South Carolina began to take special interest in the problem of improving agriculture in their area with future application to the South in general. In 1815, this group formed the Pendleton Farmer's Society, one of the first of such organizations in the country. Chartered in 1817, the Society had as its objective the promotion and improvement of agriculture and rural affairs.

Many of South Carolina's most prominent men were members of the Society. John C. Calhoun, Thomas Pinckney, and Thomas G. Clemson were very much interested in its organization and in the promotion of agriculture in general. Pinck-

ney's son, Thomas Pinckney, Jr., was the first president of the Society.

In his first address to the Society, Pinckney proposed to the group that they give a premium for the best field of wheat grown under specified conditions. Since that time many other premiums have been given for various crops and livestock, all for the promotion of agriculture. Although rice and silk were not successful in the area, they were introduced by members of the Society as possible means of helping to alleviate the "farm problem" of their day.

The year 1828 saw the completion of a hall which still stands and is presently being used as a U. S. post office. According to stories about early Pendleton, the hall served many purposes such as a law office,



"pop shop," exhibition hall, social center, etc.

This group was the first instance of organized cooperation in the Piedmont area. In its meetings, various members would speak on the relative desirability of different varieties of crops being grown and livestock being raised. Through the cooperation of this group, agriculture was materially improved. By 1867, however, a member of the Society, appealing for the founding of an agricultural college near Pendleton, felt constrained to write: ". . . our lands are so impoverished by the growth and exportation of cotton, that much of them will not pay the cost of cultivation . . ."

Through the continued efforts of the Society and others, Clemson College was founded in 1889 only four miles from the town of Pendleton. Most instrumental in this fight was the Honorable Thomas G. Clemson, for whom the college was named. It was Mr. Clemson himself, who in 1843

made this toast: "In the absence of Marl, permit me to propose to the citizens of Pendleton, a more familiar acquaintance with the effects of the application of those soils which contain Potash, Soda, and Magnesia." Could he but know the importance of fertilizer today.

The Society celebrated its centennial in October 1915, having as speakers such distinguished men as Governor R. I. Manning of South Carolina, Honorable D. F. Houston, Secretary of Agriculture, and Clarence Poe of Raleigh, North Carolina, editor of the *Progressive Farmer*. These men, and others, lauded the work of the Society as "outstanding." The Society's president indicated that Clemson College was taking the lead in helping to promote conservation of natural resources. This was especially pleasing to the members since they considered Clemson their ward.

Still active, the Pendleton Farmer's Society is an example of early organization and cooperation in agriculture.

ANOTHER PROPHET CONFOUNDED

"It is almost certain that within a generation the ever-increasing population of the United States will consume all the wheat grown within its borders, and will be driven to import, and, like ourselves, will scramble for a lion's share of the wheat crop of the world. . . . Should all the wheat-growing countries add to their area to the utmost capacity, on the most careful calculation the yield would give us only . . . just enough to supply the increase of population among bread-eaters till the year 1931."—Sir William Crookes, from an address of September 8, 1898, before the British Association for the Advancement of Science. *B.A.S. Report*, 1898, pp. 8, 12-13.

IT'S NOT THE HEAT, IT'S THE ELECTRICITY

We have heard great complaints from dairy women about their milk getting sour during a thunder storm. The following plans will prevent this in great degree. All the pans containing the milk ought to be placed on non-conductors of electricity, such as blocks of baked wood, pieces of glass, or wood that has been well painted or varnished. . . . Bees-wax, feathers and woolen cloth are also non-conductors, but inconvenient to be used. All these articles will insulate the pans and prevent the electric fluid from entering, which is the cause of acidity itself.—*Farmers Almanac*, 1847.

BOOK REVIEWS

Books for review should be sent to C. Clyde Jones, Associate Editor, Room 112,
David Kinley Hall, University of Illinois, Urbana, Illinois

Land and Labor—Europe, 1900-1950. A Comparative Survey of Recent Agrarian History. By FOLKE DOVRING. With a chapter on *Land Reform as a Propaganda Theme*, by Karin Dovring. (The Hague: Nijhoff, 1956, viii, 490 pp.)

From time to time the scholar finds on his desk a study which is so painstakingly made, which reflects such a complete grasp of the subject treated, and which arrives at such striking conclusions that he could only wish the work were his own. Such is the volume before us.

The investigation is precisely what its title says it is—an analysis of the structural features of European agriculture with emphasis upon the relation between land and labor. The author stresses throughout a distinct connection between demographic development and changes in farm structure. He finds that in the period under consideration what preserved the family farm in Western Europe was the "industrialization" of agriculture and the growth of an urban market which wanted "protective foods" that could be produced competitively by intensive cultivation. On the other hand, he discovers that the rapid increase in population in Eastern and Southern Europe contributed to a movement for the subdivision of holdings, that intensive cultivation was hampered by the lack of capital investment in optimum size units, and that latifundia have continued where "extensive" methods of farming could be employed successfully. Land consolidation has gone on only where there has been a need to conserve labor.

Land policies have frequently given the appearance of failing because they flew in the face of movements caused by strong economic and demographic forces. The rural exodus in Western Europe, which engendered a fear that the good old rustic virtues would be lost, was not stopped by governmental action, while collectivization

in the East, which inspired concern that farmers would not produce food at low prices for the cities, hindered a development toward a more complete food supply.

In the final chapter, which is an addendum in essay form, the contention is made that propagandists for agricultural reform have been overly interested in "strengthening the power of their own ideological circle" and have not given enough attention to the welfare of the entire polity. If agricultural statesmen had known more about the socio-economic processes and had aimed at increasing the economic well-being of the farmer, landholding legislation might have been a horse of another color.

Shepard B. Clough
Columbia University

The Life and Times of King Cotton. By DAVID L. COHN. (New York, Oxford University Press, 1956, iii, 273 pp., \$5.00.)

David Cohn's book is a delightful and sometimes powerful saga of cotton, its shaping influence on a great region of the United States, and the vast political, social, and economic impact it has had on the entire nation. From the beginnings of large-scale production, which came with the industrial revolution and the invention of the cotton gin, through the antebellum heyday of the plantation regime and the postbellum booms and busts, Cohn skillfully traces the course of cotton culture to its present precarious position in the American economy. Cotton, he contends, is unique in that it produces both food and fiber and is tremendously important since it is linked with many characteristic institutions of the South. Cotton culture helped to bring on the Civil War, gave the South the aura of romanticism, which sprang from the plantation system and slavery, and contributed in large measure to the

molding of the patriarchal, aristocratic organization of southern society.

At times the author overstates his case or at the least does not adequately support it. The contention (stated in the foreword) that cotton made a "Whole great region . . . one" brings forth the question: "What great region?" If he writes of the lower South only, then there are certainly other factors which should share the credit; and if he speaks of the entire South, the statement requires even more qualification since cotton was not the staple crop of the upper South. In writing of the characteristics of the plantation system the author lists first that cotton was the basic cash crop. What of sugar, rice, and tobacco? Most readers will want a word or two of supporting evidence for such statements as "Contemporary observers of the slave era and modern scholars generally agree that slavery in the South did not pay. . . ." (p. 45) since there is much evidence in the form of letters and diaries to indicate that many planters believed firmly that it did pay.

The author's Mississippi delta upbringing and his familiarity with the cotton fields is reflected as he traces the methods of growing cotton from the extensive plantation system, wasteful of land and labor, to the intensive and efficient methods of the highly mechanized farm factories of the newer provinces of the cotton kingdom in California, Arizona, New Mexico, and the high plains of Texas. His business experience blends happily with his clear and direct prose style as he treats the sometimes intricate credit and marketing arrangements of the cotton business. Antebellum factory-planter relations, post-Civil War crop-lien systems and present government subsidy policy are all revealed in sharp focus without either confusion or oversimplification.

There is little original scholarship evident in this work but this does not detract from its value as an excellent synthesis of the best secondary sources germane to cotton and its influence. Accurate and lucid explanations of the best supported and most respected arguments and theses of

outstanding scholars provide a valuable introduction to an important phase of agricultural history. Descriptive material is very well selected and is bolstered by some really lyrical passages of the author's own. Statistics are unobtrusively and skillfully used and are always accompanied by suitable and meaningful explanation.

But since the chief value of this book is as a synthesis of more extensive and detailed works many readers will be disappointed to find that scholars like Ulrich B. Phillips, Lewis Gray, C. Vann Woodward, and E. Merton Coulter are not properly identified. Professor Phillips' first name is spelled incorrectly throughout and despite the fact that Lewis Gray's *The History of Southern Agriculture to 1860* is a chief source for Cohn's volume, the author never mentions Gray's given name nor the title of his classic work either in text or index. There are no footnotes and the fact that quoted sources are noted in the index hardly takes the place of a bibliography.

Robert W. Williams, Jr., Lamar State College of Technology

The Age of Reform: From Bryan to F.D.R.

By RICHARD HOFSTADTER. (New York, Alfred A. Knopf, 1955, xx, 328 pp., \$4.50.)

The Age of Reform is an audacious re-examination of the Populist and Progressive movements with an addendum on the New Deal. Richard Hofstadter is a refreshing writer who delights the reader with his well-turned phrases and with his willingness to take a skeptical second look at established ideas in American history. In this book, Hofstadter breaks free from pedestrian details about the launching of reform movements and the interplay of groups, choosing instead to consider historically the character or "ethos" of reform and to make a study of "political thinking and of political moods."

Hofstadter sets out to make new sense of the Populist and Progressive movements by revealing the anachronistic sentimental rural-Yankee morality which overlay these

movements. The reformers' attachment to an unrealistic estimate of the course of American development, says the author, limited the effectiveness of their reforms. The New Deal is much more to the author's liking because of its more sophisticated assessment of measures required by a twentieth century urban industrial civilization. The purpose of this corrective essay is to suggest that American liberals finally turn away from narrow populistic moral pretensions and adopt a new set of unspecified reforms to meet the dilemmas of the highly organized collective community, requiring disciplined teamwork, which is now upon us.

Hofstadter pokes fun at the "zany fringes" of the Populist movement, its ethnocentrism and demonism, but it is the backward view of reformism that agitates him. He sees the Populists and Progressives as resisting a larger scale of human activity because of their attachment to "retrograde and delusive" ideals of extreme individualism and cozy small-scale competitive enterprise, a rural Utopia that never existed. The Populists are made out to be more provincial and small-minded than they were. It is not necessary nor true to claim that they proposed to turn the clock back and recreate a nation of self-sufficient farmers. The Progressives, more urban in outlook, still carried ahead the revolt against encroaching industrial discipline. The author's discussion of Progressivism minimizes the role of agriculture and the agrarians' importance is seen to lie in a veto power in Congress which was used to give national legislation a stronger rural flavor. No connection is made between Progressivism and the significant agricultural legislation of the Wilson administration. Almost as an appendix, the last seventh of the book is concerned with the Twenties and the New Deal. Hofstadter sees persisting reformist tendencies in Prohibition, which he classes as a rural responsibility, and even in the Ku Klux Klan. The Farm Bloc is properly excoriated as a "fake" insofar as achieving reform. The New Deal is seen as a wide departure from previous reform movements, not much

in tune with Bryanism and the New Freedom.

Agriculture, the author says, broke away from its "soft," romantic utopianism after the Populist revolt and developed a "hard" side of practical politics with demands for economic assistance which, while removing farmers from the reform column, put agriculture in a privileged position. It is granted, however, that this favored status is endangered as the emotional appeals of agricultural fundamentalism are wearing thin. Some of Hofstadter's intriguing and perceptive generalization give new insight to changes in farm politics, others are based upon unexamined assumptions. He has much to say of interest to agricultural historians, especially in his section "From Pathos to Parity," but he is not at home with farming which confounds easy generalization.

James H. Shideler, University of California at Davis

The Cattle Drives of David Shirk. Edited by MARTIN F. SCHMITT. (Portland, Oregon, Champoeg Press, 1956, 157 pp., \$10.00.)

In 1866 at the age of twenty-two, David Lawson Shirk left his father's farm in Will County, Illinois, bound for Idaho to begin an adventurous career—first as vegetable peddler to the miners, and then in quick succession as Indian fighter, cowboy, cattleman, and trail driver. The big events in his life were the two long cattle drives he made from Texas to Idaho in 1871 and 1873.

This book is taken from Shirk's original reminiscences written in 1920 when he was 74 years old. Unlike many accounts of this genre, it was not written from a memory which can be deceptive when a man is old. It was composed from diaries and letters saved from the times of which he was writing.

The 1871 drive, described in detail, is a remarkable odyssey of the open range cattle industry, and there is much of interest to the economic as well as the social historian. In his account of the 1873 drive,

Shirk cites prices, profits and losses, the capital and manpower required for these hazardous and time-consuming ventures.

There is danger and suspense in Shirk's story, also, as he relates his feud with Pete French, cattle baron of eastern Oregon, and just as in a classic western melodrama, the range warfare ends in a bloody shoot-out with French the victim.

The Cattle Drives of David Shirk fills a big vacuum in the recorded history of the western cattle industry, and no student, library, or book collector interested in this field of American history can afford to be without it. Martin Schmitt has written an excellent introduction, and his unobtrusive editing facilitates the flow of narrative. Beautifully printed by Lawton Kennedy in an edition of 750 copies, this book is almost certain to be a 1956 award winner for design.

D. A. Brown
University of Illinois

Soil Conservation. By SELLERS G. ARCHER. (Norman, University of Oklahoma Press, 1956, 305 pp.)

Soil Conservation, a simplified introduction and guide to better land use, will be of particular value to the practical farmer. In this volume, Sellers G. Archer, a specialist with the United States Soil Conservation Service in Oklahoma, describes the principles and practices of scientific land use, the public agencies offering technical and financial aid to the conservation farmer, and the elements of a comprehensive conservation program for cropland, grassland, forest and wildlife areas.

As Mr. Archer reviews the methods of conservation planning, of constructing terraces and waterways, of rehabilitating grasslands, and of establishing a Soil Conservation District, the reader is impressed with the degree to which a conservation program merges into simple, sound farm management. Almost every feature of scientific agriculture involves that basic element of conservation, which the author emphasizes, land capability, the "capacity

of a soil to produce over a long period of time without being destroyed. . . ." The concept of land capability has played an equally influential role in the entire history of the movement to use land resources more intelligently. John Wesley Powell, Theodore Roosevelt's Public Lands Commission, and the soil conservation pioneers of the 1920's and 1930's were all basically concerned with the adjustment of resource practices to the long-range potential of the land itself.

Soil Conservation provides little insight into the history of the conservation movement; it is not intended for that purpose. But it is an extremely handy, readable, and useful "guide to practical conservation."

Samuel P. Hays
State University of Iowa

Agriculture in an Industrial Economy, The Agrarian Crisis. By TROY J. CAULLEY. (New York, Bookman Associates, 1956, 191 pp., \$4.00.)

Those who would pose solutions for the varied and complex problems of agriculture may well ponder Pope's advice to "Drink deep or taste not the Pierian Spring." The book here reviewed attempts to carry too much on too light a chassis. Almost everything is touched upon, from agricultural mores to monetary theory, international trade, taxation policies and agricultural polities; but these obviously cannot be discussed adequately in so brief a treatment.

The book is written in a lucid, somewhat journalistic style. This easy and pleasing style serves often to gloss over the lack of foundation for sweeping generalizations that are stated in very positive form. While many of the problems mentioned and viewpoints stated are provocative and worthy of study, few if any of them are new. Almost all of them have been under serious and intensive study in recent years, even by the much disparaged "orthodox" economists.

The author makes frequent and rather contemptuous reference to this straw man

that he labels the "orthodox economist" but never tells us who or what he is. His view that there exists some sort of monolithic unity of viewpoint on the part of those who use somewhat traditional approaches in economic analysis lies at the opposite pole from that of the cynic who commented that "if all the economists were laid end to end they still would not reach agreement."

While this point does not warrant extended comment, the book reflects a rather serious misconception of the nature of economic analysis. The economist, in his scientific role, tries to discover and explain how the economy operates. That was true in earlier periods as well, though the economies described were different and the knowledge about them less adequate. Mostly, at that stage, the analyst does not attempt to say whether the reaction he finds is good or bad. Adequate and full-scale economic analysis does, of course, take account of the institutional factors Dr. Cauley stresses, as well as of those more particularly related to prices, production organization and markets. The next step in the approach to such problems is that of deciding what to do about it. This may be undertaken by the social planner, the business executive or by the economist himself, when playing a different role.

The space assigned for this review does not permit of detailed comment on the many points of interest touched on in the book. On many of them there is and has been for some years fairly general agreement. On others, which mostly are not very specifically formulated, there would be disagreement both as to the underlying assumptions and the conclusions. The chapters on international trade, land tenure, taxation and politics are not closely related to the problems discussed in the earlier sections of the book. The space they occupy could perhaps have been used to better advantage in fuller development of the earlier chapters.

Though the book as a whole seems more in the spirit of 1939 than of 1956, it nevertheless presents a number of the current problems in an interesting way. However,

neither the history nor the analysis should be accepted uncritically.

Murray R. Benedict
University of California
(Berkeley)

This Is Yours. By MILDRED K. STOLTZ.
(Minneapolis, The Lund Press, Inc.,
1956, xii, 501 pp. and 16 pp. of pictures,
\$5.00.)

(ED. NOTE: A review of this book appeared in the October 1956 number of the journal. An unforeseen delay in the printing of the October issue, plus the shifting of editorial offices from Wisconsin to Illinois, made the duplication unavoidable.)

Agricultural historians will be interested in this book. It adds materially to the sparse information available on the Farmer's Union Movement in America, especially in the years after 1920.

The book is written in an easy, conversational manner by a person who is personally acquainted with many of the leaders about whom she writes. Although an ardent believer in the Farmers' Union, the author takes a detached view of the trials and tribulations through which the movement went in her own state of Montana. Even so the reader is aware of the concern she has for the great value of general and cooperative organization for farmers, especially the kinds represented by the Farmers' Union.

The book is divided into two main parts. The first deals with the struggle to get the Farmers' Union established on a sound basis in Montana. Making liberal use of newspaper and house-organ files, the author tells of the birth pangs in the years 1910 to 1914 when over 100 locals were established. But it was not until 1916 that there were enough members—5,000 or more—to set up a state organization.

Along with the narration and excerpts from minutes of meetings and newspaper accounts of the ups and downs of the organization through the years is a record of the need for and influence of national policies on farmers of the region. In 1918 it is recorded, "Before the guaranteed

price of wheat had become effective almost all of the farmers had marketed their crops." Efforts at affiliation with the Montana Grain Growers, the Equity, and the National Board of Farmers Organizations is recorded, most of which failed. Merger with Equity, reactions to the McNary-Haugen Plan (but no reference to the Allotment Plan), and relations with the Alliance in North Dakota are described in some detail. Thus the history of the movement with its regional and national outreach is carried through, showing reasons for support of the Brannan Plan, and other important positions taken by the organization.

The second part describes the historical development of the various cooperations—fire insurance, grain marketing, livestock marketing, the farmers' union terminal association, life insurance—so that a first-hand account is available of the nature and extent of these cooperative activities. The battle of the northwest farmers, including those in Montana, against the "closed shops" nature of deals by the Minneapolis Chamber of Commerce and the unfair prices paid by dealers for hard red winter wheat, is recorded, always pointing up the plight of the hard pressed dryland wheat farmer of the region.

The book also contains a reference section giving names of state officers through the years and a bibliography containing names of many books and articles related to the Farmers' Movement in America.

D. T. Lindstrom
University of Illinois

Forest and Range Policy: Its Development in the United States. By SAMUEL TRASK DANA. (New York, McGraw-Hill Book Company, 1956, xi, 455 pp.)

From colonial beginnings, the author, who is Dean Emeritus of the School of Natural Resources in the University of Michigan, traces the growth of a body of policies governing the forest and ranges of the United States which is not confined to the lands in federal ownership. What he has produced is essentially a handbook, al-

though its size contradicts that description.

The book gets off to a slow start; 118 pages of the 322 devoted to the chronological account are concerned with developments which led up to the act of 1897 which provided the first effective legislation for administering the forest areas of the public domain. Considerable condensation could have been made in the first third of the account, without sacrifice of detail, had Dean Dana adopted earlier the trenchant style which makes the presentation in the remainder of the book so effective.

Much of the material dealing with conservation policies for government lands is familiar, but is no less useful for being so. That part of the record is brought up-to-date as far as 1955. Interwoven with it is a considerable body of less known developments dealing with state and co-operative attempts to foster resource-management practices that would lead to more efficient production in the present and greater benefits for the future. A general discussion of the police power of government to compel owners of private forests to refrain from wasteful cutting and to adopt reforestation measures in the public interest is accompanied by a survey of the extent to which states have elected to exercise their regulatory functions in this respect. Co-operative efforts between governments, federal and state, and industries to prevent and control forest fires are touched upon.

Dean Dana manages to encompass a wide range of matters bearing upon his subject. For example, he presents the views of a number of influential national organizations on public land and resource policy—the Chamber of Commerce of the United States, the National Association of Manufacturers, the Congress of Industrial Organizations, the American Federation of Labor, and the American Farm Bureau Federation—and lists the international conferences on phases of forest, range, and other resource policies. He covers the work of most of the commissions, official and semi-official, which have been concerned with the same matters.

A concluding chapter summarizes and analyzes the chronological treatment, and

is followed by three appendices, the third of which is a selected bibliography. Even more useful and, I might add, unique, are the other two. Appendix 1 gives a brief history of wildlife policy, beginning with the establishment of closed seasons for deer in the colonial period, and federal policy to date; a sketch of general policies governing certain aspects of the control and use of water resources; and a brief summary of mineral laws. Appendix 2 is entitled "Chronological Summary of Important Events in the Development of Colonial and Federal Policies Relating to Natural Resources," which begins with the first shipment of masts from Virginia to England in 1609, and ends with the second National Watershed Conference on December 5-6, 1955. This appendix covers 54 pages, and I predict that it will prove over time to be the most valuable section of the book.

E. Louise Peffer
Stanford University

These Thousand Hills. By A. B. GUTHRIE, Jr. (Boston, Houghton Mifflin Co., 1956, 346 pp., \$3.95.)

Why the Chisholm Trail Forks and Other Tales of the Cattle Country. By ANDY ADAMS. Edited by WILSON M. HUDSON. (Austin, Texas, University of Texas Press, 1956, xxxi, 296 pp., \$4.50.)

Before Barbed Wire. By MARK H. BROWN AND W. R. FELTON. (New York, Henry Holt & Co., 1956, 256 pp., \$10.00.)

The romance of the cow country continues to appeal to American readers of all ages. There is a never-ending stream of literature, both fictional and real, flowing from the presses of the nation. Among the more noteworthy selections in recent months are those listed above, as well as *The Cattle Drives of David Shirk* reviewed elsewhere in this issue.

A. B. Guthrie, Jr., whose *The Way West* and *The Big Sky* won him national acclaim as a writer of historical fiction, has produced another powerful and moving novel about the American West. The setting for

These Thousand Hills is the Montana-Oregon cattle frontier in the 1880's. The hero of the story, Lat (named in honor of Albert Gallatin) Evans, left his eastern Oregon home around 1880 to take part in a cattle drive to Fort Benton, Montana Territory. His struggles to become a successful rancher on the Tansy River were fairly typical of those experienced by the hardy souls who pushed the cattle industry northward from Texas and eastward from Oregon in the decades following the Civil War. Troubles over open range rights, rustlers and vigilantes, harsh winters (including that of 1886-1887) on the Northern Plains, and innovations to meet the challenges of nature are all subjects on which Guthrie writes with historical veracity. The author traces the transformation of an unsettled wilderness into a land of towns and fenced ranches; those vanishing Americans—the Indian and the buffalo—join the cowboys, the long drive, and the roaring cowtowns in this transition toward civilization. The one obvious departure from reality is the character and conduct of the hero, Lat Evans. That young man, always successful in attaining his lofty goals, managed to maintain an intense loyalty to his God-fearing parents back in Oregon; to his less high-minded saddle mate, Tom Ping, who married a prostitute and turned rustler; and to Callie, his "woman" from Miss Fran's Fort Benton sporting parlor. The book should be enjoyed by readers of varied tastes.

A reader of *These Thousand Hills* will appreciate the change in tempo in *Why the Chisholm Trail Forks and Other Tales of the Cattle Country*. This collection of tall stories belongs on the shelf with the best of American folklore. The book is thoroughly entertaining and does not have to be read in its entirety in order to be worthwhile. The editor, Wilson M. Hudson, collected 51 yarns from the works of Andy Adams, all but four of which have been previously published. The first 12 tales were originally printed in Adams' *Log of a Cowboy* in 1903 and have come to be considered by many as classics in the literature of the West. The campfire

stories (all but one are of this type) vary greatly in subject matter, running "from the sublime to the ridiculous, from a true incident to a base fabrication, or from a touching bit of pathos to the most vulgar vulgarity." Editor Hudson hastens to remind the reader that "Andy does not tell any of the vulgar kind. . . ." The book is attractively illustrated by pen sketches from the desk of Malcolm Thurgood.

Before Barbed Wire serves as an excellent companion piece for the Guthrie and Adams books. The authors have collected 124 photographs from the files of L. A. Huffman, nineteenth century frontier photographer, for this second half of a two-volume pictorial history of the Dakota-Montana country (the first volume, *The Frontier Years*, appeared in 1955). *Before Barbed Wire*, as the title suggests, presents life on the open range in the last decades of the nineteenth century. The pictures,

accompanied by a well written text and selected notes from Huffman on some of the photographs, are used to show the development of the range cattle and sheep industries. The closing section is devoted to the coming of the "nestors," the plow, and barbed wire, and the end of the open range. Amateur photographers will marvel at the quality of the prints, especially considering the limitations under which Huffman worked. Many of the shots were taken with "home-made" cameras, using wet plates. This reader was slightly annoyed with the necessity of frequently turning the book in order to view the pictures but nonetheless found the effort sufficiently rewarding. A reasonably extensive, but not all-inclusive, bibliography is presented, along with an excellent map of the area.

C. C. Jones
University of Illinois

NOTES AND COMMENTS

Newly elected president of the Agricultural History Society is Walter H. Ebling, Professor of Agricultural Economics, College of Agriculture, University of Wisconsin. The new vice president is John I. Falconer, recently retired Professor of Agricultural Economics, Ohio State University. Two new members appointed to the Executive Committee are H. C. M. Case, former head of the Department of Agricultural Economics, College of Agriculture, University of Illinois; and Mildred Throne, associate editor, State Historical Society of Iowa.



Mrs. E. P. Ellwood of DeKalb, Illinois, has given the Archives and Western History department of the University of Wyoming the records of the famous Isaac L. Ellwood Barbed Wire Companies.

The Ellwood Company, manufacturing barbed wire invented by Joseph Glidden, was one of the first to sell barbed wire on an extensive basis in the American West.

The Ellwood Collection coupled with the Wyoming Stock Growers' Association files makes the Western Range Cattle Industry at the University of Wyoming an especially strong research field for scholars in Western History.

The Ellwood records consist of one hundred and twenty-five letter file boxes, seventy-five letter press books, sixty ledgers and a large amount of unclassified correspondence.



A memorial science building at Simpson College, Indianola, Iowa, was recently dedicated to the memory of Dr. George Washington Carver. It was at Simpson College that Dr. Carver, the son of Negro slaves, studied chemistry, botany and biology to form the basis of his later research in diversified agriculture which made him a world-famous scientist at Tuskegee Institute. George Washington Carver Science Hall contains several laboratories, a lecture hall, greenhouse, library, and museum.

Eli Whitney's first commercial cotton gin and his reconstructed workshop will form the nucleus of The Eli Whitney Museum, soon to be established in Savannah, Georgia.



An annual award of \$250.00 has been established by Henry and Ida Schuman of New York City for an original prize essay in the history of science and its cultural influences. This competition is open to undergraduate and graduate students in any American or Canadian college, university or institute of technology. Papers submitted for the prize competition should be approximately 5,000 words in length, exclusive of footnotes, and thoroughly documented. It is hoped that the prize-winning essay will be suitable for publication in *ISIS*, the journal of the History of Science Society.

It is the wish of the donors that "History of Science and Its Cultural Influences" should be broadly interpreted. The papers—which should in each case be original contributions to learning—may deal with the ideas and accomplishments of scientists in the past; they may trace the evolution of particular scientific concepts; or study the historical influences of one branch of science upon another. The phrase "cultural influences" is taken to include studies of the social and historical conditions that have influenced the growth of science, or the effects of scientific developments upon society in the realms of philosophy, religion, social thought, art and literature, economic progress, etc. Essays dealing with medical subjects are not acceptable, although papers dealing with the relations between medicine and the natural sciences will be welcomed.

Papers submitted for competition should be sent to the Chairman of the Prize Committee, Professor Harry Woolf, Department of History, University of Washington, Seattle 5, Washington. Inquiries about the competition may also be addressed to Professor Woolf. To be eligible for consideration, papers must be received on or before the first of June, 1957. The announcement of the prize-winning essay will

be made at the annual meeting of the History of Science Society, which occurs in December of each year.

ACTIVITIES OF MEMBERS

William D. Barns of West Virginia University has been elected president of the West Virginia Historical Society.

Harold E. Briggs has resigned the chairmanship of the Department of History at Southern Illinois University to devote full time to teaching and research.

William L. Cavert is retiring as Director of Research at the Farm Credit District at St. Paul in March.

Arthur C. Cole has been given a John Hay Whitney Foundation appointment for 1956-57 as visiting professor at W. C. Post College of Long Island University.

Tom Dale of the Soil Conservation Service has replaced Wellington Brink as editor of *Soil Conservation*.

Robert G. Dunbar of Montana State College discusses "The Economic Development of the Gallatin Valley," *Pacific Northwest Quarterly*, 47:117-123 (October 1956).

Clayton S. Ellsworth of the College of Wooster taught at Western Reserve University during the summer of 1956.

Paul Wallace Gates of Cornell University has been appointed to a fellowship at the Henry E. Huntington Library to carry on his study of "The Struggle for Land: An Agricultural History of the United States, 1815-1860."

Norman A. Graebner, of Iowa State College, is serving as visiting professor at the University of Illinois.

John D. Hicks of the University of California expresses some of his views regarding history and historians in "State and Local History," *Wisconsin Magazine of History*, 39:130-137 (Winter, 1956), and in "What's Right with the History Profession," *Pacific Historical Review*, 25:111-125 (May, 1956).

Frenise A. Logan of the Agricultural and Technical College of North Carolina discusses "The Colored Industrial Associa-

tion of North Carolina and Its Fair of 1886," *North Carolina Historical Review*, 34:58-67 (January 1957).

Donald R. Murphy, editor of *Wallace's Farmer and Iowa Homestead* from 1933 to 1955, discusses the history of that paper in "The Centennial of a Farm Paper," *Palimpsest*, 37:449-480 (September, 1956).

Lois Olson, Washington, D. C., has recently become a life member of the Society.

Harold T. Pinkett's "A bibliography of recent publications on Negro History," appeared in the April, 1956 issue of *The Journal of Negro History*.

Earle D. Ross, who retired from active teaching at Iowa State College in June, 1956, is now engaged in preparing a history of the College for its centennial in 1958.

Reynold M. Wik has returned to Mills College after spending a year as a Fulbright lecturer at the Free University, Berlin, Germany.

Vivian Wiser, formerly with the National Archives, has joined the history staff of the U. S. Department of Agriculture.

RECENT ARTICLES OF INTEREST

The Arkansas Historical Quarterly—Fall, 1956: "A Review of My Membership in the Farmers Union," by William E. Holbrook.

Current History—August, 1956: "The Changed Political Role of the Farmer," by Gilbert C. Fite.

September, 1956: "The Role of the Farmer in American Life," by Earle D. Ross; "The Changing Nature of the American Farm," by Vernon Carstensen; "Who Speaks for the Farmer?" by Wesley McCune; "Government and the Farmer Since World War I," by Theodore Saloutos; "The Price Dilemma in Agriculture," by Irene Till; "The Agricultural Surplus," by John D. Black; October, 1956: "The Farm Issue," by Gilbert Fite.

Illinois State Historical Society Journal—Summer, 1956: "Funk Memorial at Research Acres," by Helen M. Cavanagh.

Journal of Economic History—September, 1956: "The Locofoeos: Urban 'Agrarians,'" by Carl N. Degler.

Kansas Historical Quarterly—Autumn, 1956: "Holding Down a Northwest Kansas Claim, 1885-1888," edited by Kenneth W. Porter.

Maryland Historical Magazine—September, 1956: "Burleigh Manor in Howard County," by Francis C. Haber.

Michigan History—September, 1956: "The Chautauqua in Lansing," by Melvin H. Miller; "A Country Store a Century Ago," by Carl E. Burkhardt.

Mississippi Valley Historical Review—September, 1956: "Franklin D. Roosevelt and the Farm Problem, 1929-1932," by Gertrude Almy Slichter.

Missouri Historical Review—July, 1956: "Private Land Claims in Missouri," by Lemont K. Richardson.

October, 1956: "The Early Telegraph in Rural Missouri, 1847-1859," by John E. Sunder.

Nebraska History—June, 1956: "The Morning Star of the Reformation: William Jennings Bryan's First Congressional Campaign," by Paolo E. Coletta.

The Ohio Historical Quarterly—July, 1956: "Ohio Agriculture in History," by Robert Leslie Jones; "Ohio Agriculture Today," by L. L. Rummell.

Pacific Northwest Quarterly—October, 1956: "The Economic Development of the Gallatin Valley," by Robert G. Dunbar.

Palimpsest—September, 1956: "Centennial of a Farm Paper," by Donald R. Murphy.

Pennsylvania History—October, 1956: "The Pioneer and the Forest," by Lewis E. Theiss.

The Southern Economic Journal—July, 1956: "Cotton and the World Economy," by Royall Brandis.

Southwestern Historical Quarterly—October, 1956: "Agitation in Texas for Re-opening the Slave Trade," by Earl W. Fornell.

THE AUTHORS

THOMAS L. BUSHELL, graduate student in history at Northwestern University, is a native of southwest England, where he "grew up rather close to the soil."

IRA J. CONDIT, is emeritus professor of horticulture, Citrus Experiment Station, Riverside, California. He has long been interested in the history of fruits, and has published extensive bibliographies of the fig and avocado.

F. HAL HIGGINS, contributor of the Standish papers, is an agricultural engineer and former editor of several agricultural periodicals. He now lives in Walnut Creek, California.

DONALD JACKSON is editor of the University of Illinois Press and author of the recently published *Black Hawk*. His contribution to this issue is the result of studies he is making into the history of the Mississippi Valley during the early 19th century.

VERNON C. LARSON is assistant professor of agricultural short courses, Michigan State University, East Lansing.

C. E. WOODALL and GEORGE H. AULL are both associated with Clemson Agricultural College, Clemson, South Carolina. Mr. Aull is head of the department of agricultural economics, Mr. Woodall is assistant agricultural economist.

DECEMBER 1956 MEETINGS

The Society, as it has for many years, sponsored a joint session and a luncheon in connection with the annual meeting of the American Historical Association. The program was arranged by Donald J. Berthrong, David M. Ellis, and Albert V. House. Both the joint session and the luncheon were held at the Sheraton-Jefferson Hotel, St. Louis, Mo., on December 30, 1956.

The joint session, with Gilbert C. Fite, University of Oklahoma, as chairman, had as its theme Agricultural Leadership. Weymouth Jordan of Florida State University discussed Noah B. Cloud and the American Cotton Planter; Roy Scott of the University of Illinois spoke on Milton George and Agricultural Leadership; and James H. Shideler of the University of California at Davis presented a paper entitled "A Farm Controversy, Wallace vs. Hoover." The discussion following the papers was ably led by John T. Schlebecker of Iowa State College.

The luncheon conference, with Joseph Batchelor as chairman, featured the Society's presidential address, delivered by George L. Anderson of the University of Kansas. Professor Anderson's subject was "From Cattle to Wheat: The Impact of Agricultural History Upon Banking in Early Wichita."

The Journal of Farm Economics

PUBLISHED BY *The American Farm Economic Association*

Editor: HAROLD G. HALCROW

University of Connecticut, Storrs, Connecticut

Vol. XXXIX

February 1957

Number 1

Career and the Orientation of Agricultural Economics.....	ROGER W. GRAY
Specification Bias in Estimates in Production Functions.....	ZVI GRILICHES
The Market As a Unit of Inquiry in Agricultural Economics Research.....	WILLARD W. COCHRANE
Simplified Presentation of "Transportation-Problem Procedure" in Linear Programming.....	MILTON M. SNODGRASS AND CHARLES E. FRENCH
Determining the Relative Economy of Home-Produced and Purchased Milk.....	ELOISE S. COFER
Use of Photographs in Consumer Preference Studies of Pork.....	R. O. GAARDER AND N. V. STRAND

This Journal contains additional articles, notes, and book reviews and is published in February, May, August, November, and December. Yearly subscription \$5.00.

Secretary-Treasurer: LOWELL S. HARDIN
Department of Agricultural Economics
Purdue University, LaFayette, Indiana

The Everett Eugene Edwards Awards in Agricultural History

The Agricultural History Society, in partial recognition of the outstanding services of Everett E. Edwards to the organization and in honor of his memory, has established the Everett Eugene Edwards Memorial Awards to be given to the authors of the two best articles (presidential addresses excluded) in *Agricultural History* each year. One prize of \$50.00 is offered for the best manuscript submitted by an author who is in the course of taking a degree and one prize of \$50.00 for the best published article by an author who is a more advanced scholar.

The Awards are financed from the Edwards Memorial Fund to which all members of the Society and other interested persons are invited to subscribe. However, the amounts necessary to pay the Awards for a period of ten years have been guaranteed by three of Edwards' former co-workers.

All articles to be considered for publication and other communications regarding editorial matters should be addressed to D. A. BROWN, College of Agriculture, 226 Mumford Hall, Urbana, Illinois. Address inquiries regarding the MEMORIAL FUND, MEMBERSHIP IN THE SOCIETY, and business matters to WAYNE D. RASMUSSEN, Secretary-Treasurer, U. S. Agricultural Marketing Service, Washington 25, D. C.

AMERICAN ECONOMIC ASSOCIATION

The American Economic Association, founded in 1885, is an organization with a membership of over seven thousand persons interested in the study of economics or the economic phases of social and political questions. Its purpose is the encouragement of perfect freedom of economic discussion. The Association as such takes no partisan attitude, nor will it commit its members to any position on practical economic questions.

The publications of the Association consist of the *American Economic Review*, a quarterly, the *Proceedings* of the annual meetings, a handbook or directory, and occasional monographs on special subjects. Yearly subscription to all publications is \$6.00.

There are six classes of active membership: annual, \$6.00; family (second member without *Review*), \$1.00; junior (graduate students, for three years only), \$3.00; subscribing, \$10.00; contributing, \$25.00; life, \$100.00 in a single payment.

Send for information booklet and address inquiries concerning membership and subscription to:

JAMES WASHINGTON BELL, *Secretary-Treasurer*,
American Economic Association,
Northwestern University,
Evanston, Illinois

MEMBERSHIP IN THE MISSISSIPPI VALLEY HISTORICAL ASSOCIATION

may be had by making application to the Secretary and by payment of the annual dues provided by the Constitution. All members will receive the Review issued quarterly. Dues: Library membership, \$5 annually; Sustaining membership, \$5 annually; Life membership, \$100.

•

Address: WILLIAM D. AESCHBACHER, Secretary

MISSISSIPPI VALLEY HISTORICAL ASSOCIATION

1500 R Street
LINCOLN 8, NEBRASKA